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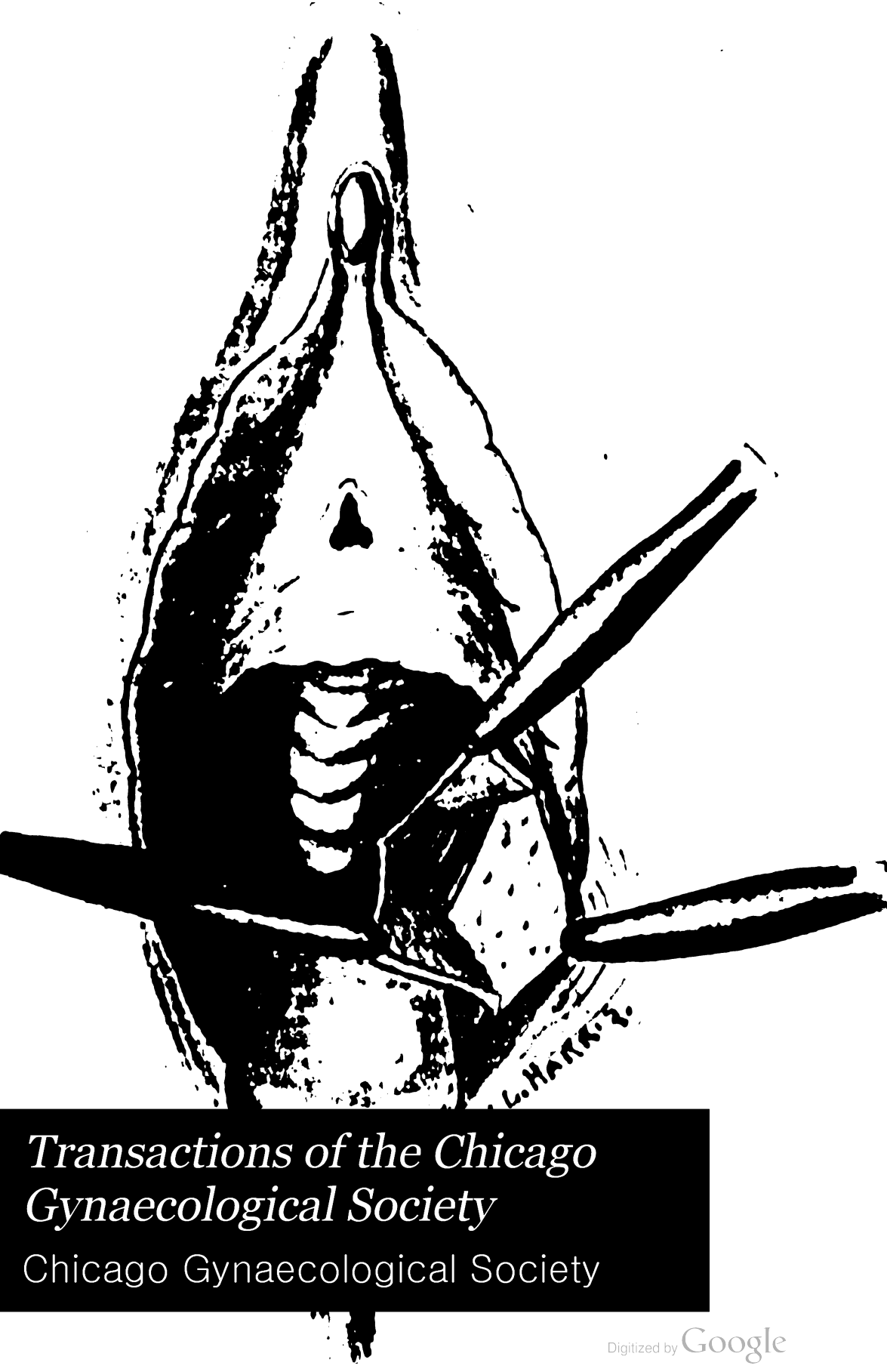

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OF THE

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FROM

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TRANSACTIONS

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A PLEA FOR A MORE SURGICAL PRACTICE OF OBSTETRICS.*

SAMUEL L. WEBER, M.D., CHICAGO.

The bulk of the practice of obstetrics is to-day in all lands in the hands of the unskilled; in the hands of those untrained in surgical skill and surgical technique. In no other branch of medicine exists so great a difference between the practice of the professors of the art and that of the body of the practitioners.

I wish to submit the thesis that the correct practice of obstetrics requires not only a knowledge of its physiology, pathology, and general conduct, but also in a large majority of cases a thorough training in surgical art and technique. That childbirth is a physiological process is but half the truth. The other half is that the majority of cases of labor (and the percentage is increasing) are either accompanied or followed by complications and accidents that either immediately menace the woman's life or lay the foundation for future illnesses. All of these complications and accidents are surgical in their nature; and I repeat they are not recognized and handled by the bulk of the accoucheurs as similar lesions and accidents are, when occurring in other portions of the body.

Why is the practice of obstetrics a surgical art? I do not wish to refer to the graver accidents of childbirth, such as rupture of the uterus, immense lacerations of the outlet, cases of dystocea requiring Cæsarean section, symphysiotomy, etc.; these are generally conceded

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* Read. For *Discussion*, see page 29.

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to belong to the surgeon. I wish to consider merely the ordinary run of obstetrical work.

What is a successful obstetric case? One in which the child is born alive and uninjured, and in which the mother remains alive, and, after a period of non-febrile convalescence of about three weeks, is in good general health and free from anatomical defects sufficiently grave to be the cause of future illness. Is such success generally attained? Is it intelligently striven for by the body of accoucheurs? Certainly not.

Our books and teaching of obstetrics come from men who practice obstetrics alone or obstetrics and gynæcology only, and whose ripe experience and statistics come from large maternities over which they are the chiefs. In these large maternities abroad the bulk of the material consists of healthy young primiparæ. Furthermore, in those maternities the puerperæ are kept but ten days or so, then sent out and never seen again. Their future well-being and anatomical soundness is not inquired into and is not known.

Mortality and morbidity statistics obtained from such sources differ in essential points from mortality and morbidity statistics obtained in the general private practice of obstetrics.

In the first place, the material is different. In general private practice we get primiparæ and multiparæ, the latter in greater number. We get a far greater number of women in whom autoinfection is possible. The condition of a healthy genital tract—a sterile uterine cavity, a plug of mucus in the cervix, and the vaginal bacillus the only tenant of an acid secretion in the vagina—will be found in but a moderate number of pregnant women. Endometritis, mild or grave, is very common; large granulating and pus-discharging cervical tears are fairly common; gonorrhœa, pure or mixed infection, is fairly common; a relaxed vaginal outlet inviting the ingress of a constant stream of fresh and virulent bacteria into the vagina is common. Every third woman we confine gives a history of leucorrhœa. Every second woman we confine gives a history of recent abortions—induced or accidental.

In the second place, their mortality is much lower. That is necessarily so—for two reasons. Their material is so much more favorable, as has just been pointed out; and their mastery of, and facilities for, doing aseptic work is so much greater. Reading their low mortality statistics lulls the general practitioner into an indifference to asepsis and antisepsis. "Oh, well; the danger is very slight, anyway," is a common remark.

As is well known, however, to those who have looked up general

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mortality statistics and who keep their eyes open to what is going on in the sphere of their possible observation, the mortality in general obstetrics has not been reduced so very much in the past generation.

In the third place, their morbidity statistics are worthless. In nearly every book and article by maternity professors morbidity means puerperal fever which did not end fatally. Are the puerperal fevers the only ailments which arise during or are caused by the parturient act? By no means. This is a matter that is not given the emphasis it deserves by our teachers and writers. Every fragment of placental tissue left behind in the uterus may give rise to immediate or future trouble. Every laceration of the cervix or of the vagina may do the same. Tears of the pelvic floor are very common and generally overlooked and left unrepaired to give the woman future years of variegated misery and treatment.

Subinvolution, flexions, metritis, endometritis, endocervicitis, reflexed vaginal outlet, vaginal prolapse, rectocele, cystocele, descensus and prolapse of the uterus—any of these may be the result of confinement, and if so must come under the heading of morbidity of the puerperium even if they do not manifest themselves until some time after confinement.

Looked at in this light the possible morbidity of the parturient process is enormous. Far greater in private than in hospital practice, because of the lack of facilities for septic and surgical work, and because of the lack of skill of the general accoucheur.

It is very evident that all accidents and departures from the normal, whether grave or of minor degree, which occur during a case of confinement are of surgical nature and to be met by the employment of surgical procedures. Both accoucheurs and the laity consider an accouchement successfully conducted if the child is born alive, and the woman does not get fever and escapes without a perinæal tear that extends into or beyond the sphincter ani muscle. I maintain that a woman has a right to expect more than this from her accoucheur. She has a right to expect to be left in such a condition that she will not suffer in the future—with uterus empty and well contracted, with no large cervical tear, no laceration of the pelvic floor, and no infection. In conducting a confinement case there is required far more than merely a little soap and water for the hands and letting nature do the rest.

If women were educated up to this point then "anybody" would not be considered good enough to conduct a confinement case; then there would be an end to the mediæval institution of midwives; then

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there would be a demand for thorough training in obstetrics; then obstetrics will rank as a specialty.

Let us see what a proper conduct of a confinement case should be. First, a knowledge of gynæcological and general medical history of the woman. Does she give a history of recent leucorrhœa? Of gonorrhœa? Has she a large, relaxed, vaginal outlet? If either of these things, then antiseptic as well as aseptic procedure will have to be employed. We thus should separate the septic from the aseptic cases. Of course, only a bacteriological examination will enable us to do this with certainty, and in maternities and in private practice when possible it should be done.

In all cases the patient should be prepared as for a vaginal operation. The hair about the parts should be closely cut—it were, of course better to shave—and the parts cleansed as for a surgical operation. The bed-clothes and the patient's chemise and drawers should be freshly washed and put on clean for the confinement. The room and surroundings should be prepared as nearly as possible for a surgical operation. The accoucheur and assistants in surgical attire and in a surgical state of cleanliness. In the leucorrhœal and other possibly septic cases the vagina should be disinfected as for a vaginal operation; simply a douche of course, will not do. In the aseptic cases, which are the majority, no vaginal disinfection should be attempted. Examinations should be as few as possible, but the same time as often as necessary. The second stage of labor should not be allowed to continue too long. If progress is not continuous, there should be no hesitation about applying the forceps. Prolonged labor produces depression and shock, the lowered vitality produced thereby favors the spread of infection. When the child is about to be born the patient should be put on a properly prepared table in the lithotomy position. Any necessary manœuvre can be more dexterously performed on a table than in a bed. Forceps can be applied and used, and version and extraction more easily done. The perinæum can be more readily protected; and after the birth of the child hæmorrhage, if any, can be controlled more easily. Besides, what is of greater importance, perfect aseptic and antiseptic work can be done only on the table. The woman should now be kept on the table until everything is over. During the fifteen or thirty minutes between the expulsion of the child and that of the placenta, the patient must be made as comfortable as possible on the table, the limbs allowed to be straightened, the patient well covered, and a stimulant of something warm given. When the placenta comes or is extracted the lithotomy position of the patient

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is resumed. The placenta should be carefully inspected. If there is any deficiency, the retained fragment must be recovered. If necessary there should be no hesitation to pass the hand into the uterus. The neglect to do this is very common; the possibilities of bad results from placental fragments left in the uterus are numerous—hæmorrhage, sepsis, subinvolution and endometritis. We must in every case leave an absolutely empty uterine cavity. We must now in every case inspect the genital canal. A large cervical tear should be sewed up at once. A small one may be disregarded in the clean cases. When leucorrhœa is present it is best to sew up even a minor cervical tear, for in these cases every additional raw surface is another invitation for infection and a future endometritis. Superficial tears of the vagina may be neglected in the clean cases, but sutured in the leucorrhœal cases.

The most careful search should then be made for a laceration of the levator ani muscle or the floor of the pelvis. This is the most serious lesion if left untreated. It is very commonly overlooked. It is seen as a deep tear in one or the other or both sides of the vagina, almost always a continuation upwards of a laceration of the perinæum. That such a laceration of the pelvic floor is common is shown by the great frequency of rectocele, cystocele, and other evidences of a relaxed vaginal outlet, as it is now called. There is no excuse for leaving this serious lesion unrepaired. If looked for it can be found, and it can be readily repaired. A woman has a right to have such an injury repaired at once, for if unrepaired it eventually and certainly cripples and invalids her. It is especially criminal not to repair this injury at once, for it can rarely be repaired later, as the torn fibres of the muscle retract and soon atrophy. Future repairs of a relaxed vaginal outlet rarely accomplish more than a narrowing of the mucous membrane lining the vagina, no matter whose plan of denudation is followed; the muscular support of the vagina not being there, the mucous membrane stretches again and the old condition of vaginal prolapse recurs. The tear of the perinæum, if any, should now be repaired. The uterus meanwhile should be gently massaged and watched.

If the hand has been introduced into the uterus, if forceps have been used, and if any suturing has been done, the whole genital canal should be copiously irrigated, with sterile water in the clean cases, and with lysol solution in the leucorrhœal ones.

The clean cases require no further local attention. The cases in which autoinfection is possible should have two copious antiseptic uterine irrigations daily for three or four days.

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THE REPAIR OF OLD LACERATIONS OF THE PELVIC FLOOR.

By M. L. Harris, M.D.,
Professor of Surgery, Chicago Polyclinic, Chicago.

So much has been written on the subject of the perinæum and pelvic floor of the female, that it would seem almost impossible to present anything new in this connection. My anatomic studies and investigations, together with my clinical experience, have convinced me that much that has been written has been based on imperfect knowledge of the anatomy and mechanics of the parts. Nor is this surprising

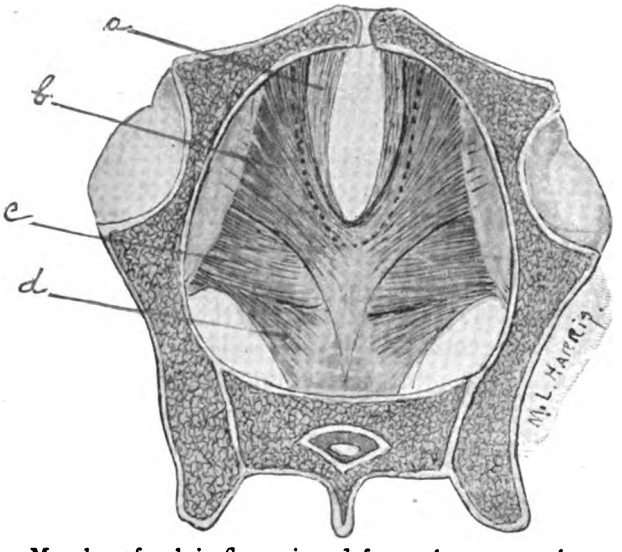

Fig. 1.—Muscles of pelvic floor viewed from above; a, pubo-rectalis, partially overlapped by "b"; b, pubo-coccygeus; c, ilio-coccygeus; d, ischio-coccygeus.

when it is seen how lamentably defective the text-books on anatomy are in the description of this region.

The pelvic outlet of the male is often well described, while that of the female, even in some of our most recent anatomies, is almost

*Read. For *Discussion*, see page 33.

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entirely neglected. As the female perinæum requires the attention of the surgeon many times as often as that of the male, this must be considered a serious omission.

The old idea of the central perinæal body forming the main support of the pelvic contents has long since been abandoned by most writers, and proper attention and study have been directed to the muscular layer with its fasciæ, which forms the true support at the inferior strait.

It still appears difficult, however, for some to properly appreciate this supporting layer, and the value of active muscular action in its maintenance. The layer as a whole may be recognized, but the fasciæ

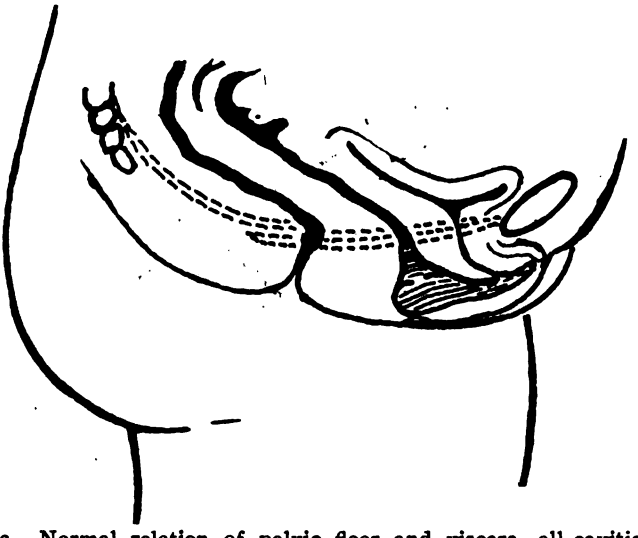

FIG. 2.—Normal relation of pelvic floor and viscera, all cavities empty (saggital section); shows marked perineal flexure of rectum and vagina; dotted line plane of pelvic floor.

are looked on as playing the chief rôle in the support. For instance, in one of our most recent and excellent text-books on gynæcology, we find this statement:* "It is equally untrue that the muscles, especially the levator ani, furnish a continuous support, *i. e.*, it is unphysiological for muscles to be in a constant state of action. Such tendency would soon destroy their power. The recto-vesical fascia is in itself sufficient when intact to afford the required support." There is much contained in this statement, and as I disagree with it almost *in toto* the various points will be considered in order.

Take the point that "the recto-vesical fascia is in itself sufficient,

* Dudley, 1898, p. 438.

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when intact, to afford the required support." This, in my opinion, is an error. Fasciæ in themselves never furnish the kind of support here meant. There is not an instance in the human body where a fascia, aponeurosis, ligament or similar structure, unaided by muscular action, sustains for any great length of time any weight or tension. It is an invariable rule when weight or tension is permanently thrown on fasciæ or ligaments, through the loss of muscular power, that these structures yield and lengthen. If the muscles of one side of the back become weakened or paralyzed, scoliosis quickly results, notwithstanding the powerful ligaments binding the vertebræ together. When paralyses of certain muscles of the leg occur, the ligaments of the arch of the foot

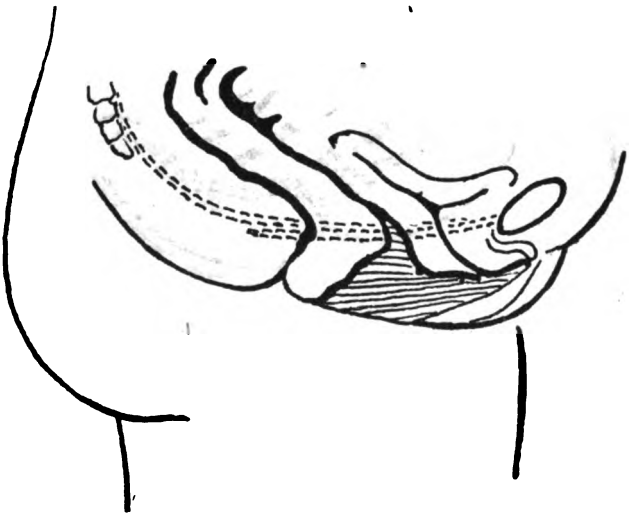

FIG. 3.—Laceration of "perineal body" (partial) without involvement of the pelvic floor. No effect produced on relations of the viscera.

and the plantar fascia invariably yield and the arch of the foot is lost. So it is in every instance throughout the body, and so it would inevitably be were the fasciæ mentioned left alone to furnish the support at the pelvic diaphragm.

The second point with which I disagree is that "it is unphysiological for muscles to be in a constant state of action" as "such tension would destroy their power." The direct opposite of this is true. Every normal muscle is in a constant state of activity. This does not mean that every muscle is constantly exerting its full contractile power, but that every muscle is constantly exerting a certain amount of contractile power which varies somewhat in different muscles. Cut any normal

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muscle and its ends instantly retract. This is called muscular tone, but call it what you will it can only be interpreted as the constant exertion of a certain amount of energy due to the continuous activity, in a manner, of the contractile elements composing the muscle. As already stated, the degree of activity varies in different muscles. No one will deny that the sphincter ani practically acts continuously, and that it exerts a greater degree of tension than does the sphincter oris. The length of time which increased or so-called voluntary muscular action may be sustained varies greatly in different muscles, according to habit. For instance one may sit for hours, reading, totally unconscious of the constant action of the muscles of the body holding him

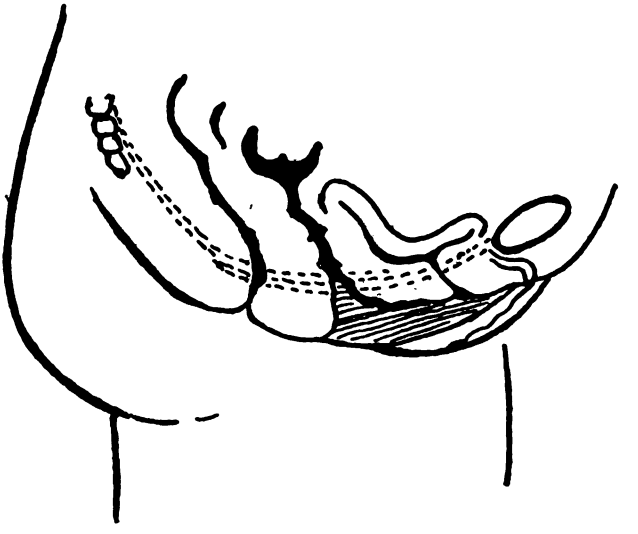

FIG. 4.—Laceration of pelvic floor, with intact perineal body. Shows loss of perineal flexure of rectum and vagina: sagging of vagina, particularly anterior wall; recession of vagina and rectum from symphysis pubis.

erect, of the muscles of the arm holding the book, and of the eye producing accommodation. Yet some other and less powerful muscular action, to which he was unaccustomed, would produce fatigue in a very few moments.

The third point in the above statement namely: "It is equally untrue that the muscles, especially the levator ani, furnish a continuous support," it is evident I likewise dissent from, and in answering the first two, have, at the same time, answered it. My position then is, that the so-called pelvic diaphragm or floor depends for its support absolutely on the practically continuous activity of the intact muscles

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which enter into its formation, and that the fasciæ are merely adjuncts to the muscles and in themselves entirely inadequate to furnish the support required.

The muscles entering into the formation of the pelvic floor, as has already been remarked, are very imperfectly described in most textbooks of anatomy. They may be divided into two layers, an inner and an outer. We will concern ourselves for a few moments with the inner only. This is the layer which enters into the formation of the diaphragma pelvis proprium and is composed of four paired muscles. It is not always easy in the human subject to draw sharp lines of demarcation between some of these muscles at all points, and some knowl-

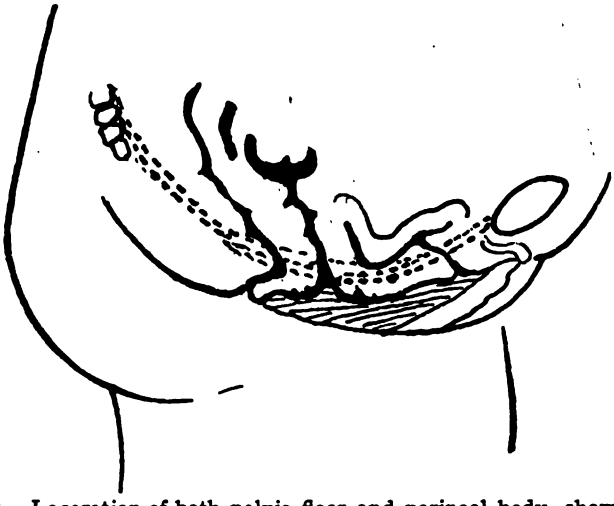

FIG. 5.—Laceration of both pelvic floor and perineal body, shows exaggeration of sagging and recession shown in FIG. 4. with rectocele and vesicocele.

edge of comparative anatomy is necessary to a clear understanding of them.

Comparative anatomy teaches us that these muscles are the representatives of well-developed clearly-defined muscles which, in the lower animals, are concerned in the movements of the caudal appendage, and which, owing to the loss of the caudal appendage, and the assumption of the erect posture through evolution, have somewhat readjusted their character and attachments to conform to their new function of closing the pelvic outlet and supporting the pelvic contents. These four muscles are called the ischiococcygeus, iliococcygeus, pubococcygeus, and puborectalis. (Fig. 1.)

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Briefly, the ischiococcygeus arises from the spine of the ischium and is inserted into the lateral border of the lower part of the sacrum and the upper part of the coccyx. The iliococcygeus arises from the iliac portion of the obturator fascia, and is inserted into the lateral border of the lower part of the coccyx and a median raphe. These

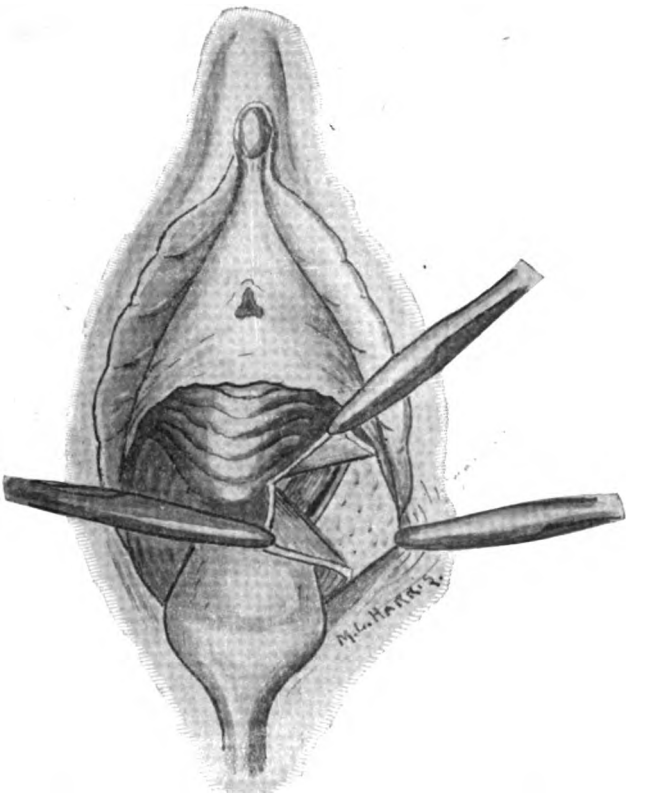

Fig. 6.—Line of incision, with flaps raised, showing edge of muscle when perineum is not torn.

two muscles will interest us but little, and will not be further considered.

The pubococcygeus arises from the lower border of the symphysis ossis pubis, from the posterior surface of the body of the os pubis, and from the obturator fascia as far back as the iliopectinæal eminence. From this somewhat extensive origin the fibers pass mesodorsad, passing by the urethra, vagina and rectum, lying cephalad of the lower portion of the iliococcygeus, and are inserted with those of its fellow from

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the opposite side by means of a tendinous expansion into the ventral surface of the coccyx and lower part of the sacrum, the more ventral fibers interlacing directly with those of its fellow as a girdle posterior to the rectum.

The puborectalis lies beneath or caudad of the ventral portion of the pubococcygeus, from which it is separated ventrally by an intermuscular fascia. It arises from the outer lower portion of the symphy-

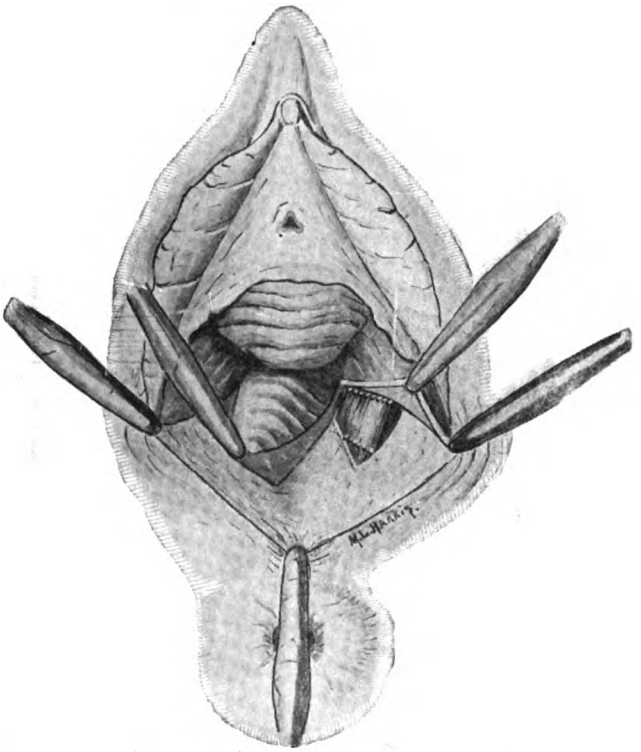

FIG. 7.—Denudation and incision when accompanied by laceration of perineum—shows muscle exposed, with part to be excised.

sis ossis pubis or the beginning of the descending ramus and the cephalic surface of the urogenital fascia. Its fibers usually form a well-defined muscular loop which passes dorsad, encircling the rectum at the perinæal flexure, when it becomes continuous with its fellow. In passing by the rectum some of its fibers enter the wall of the rectum, gradually become tendinous and pass caudad as far as the cutaneous surface. A few fibers also pass anterior to the bowel, between it and

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the vagina, some of them eventually becoming continuous with the transverse perinæi muscle of the opposite side.

The pubococcygeus and the puborectalis together form what is usually termed the levator ani muscle, and are the most important muscles of the pelvic floor. They produce the characteristic perinæal flexure of the rectum and vagina, and form the chief support of the pelvic viscera. They must undergo the greatest elongation during dilatation of the pelvic outlet for the passage of a child, and, therefore, are most

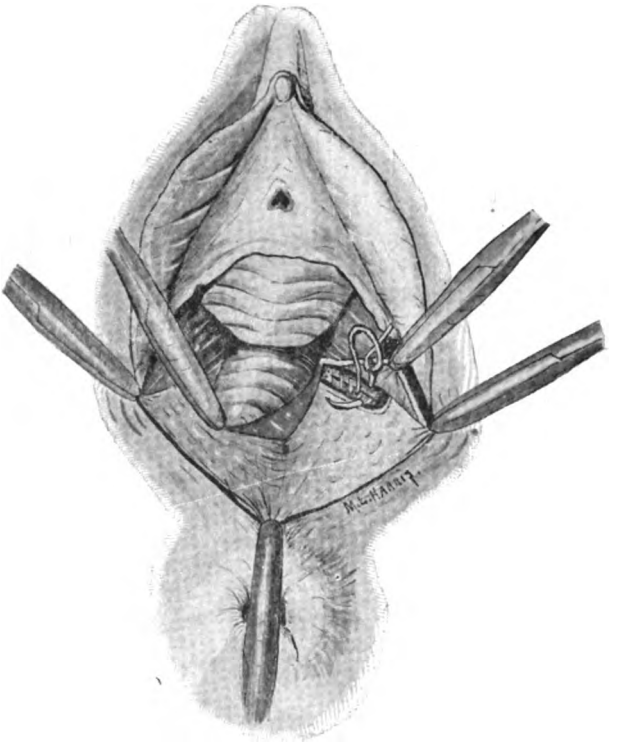

FIG. 8.—Muscle drawn together with buried catgut suture.

liable to suffer rupture or laceration, as will be shown later. The more ventrally placed fibers pass almost directly ventrodorsad, while on frontal section the muscular plane slopes from the periphery toward the center and cephalocaudad. In the space between the opposite muscles ventrally pass the vagina and urethra, and it is extremely important to clearly understand the relations of these muscles to the lateral walls of the vagina. The normal virgin vagina is not a simple straight

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tube. In passing from without inward the general direction of the

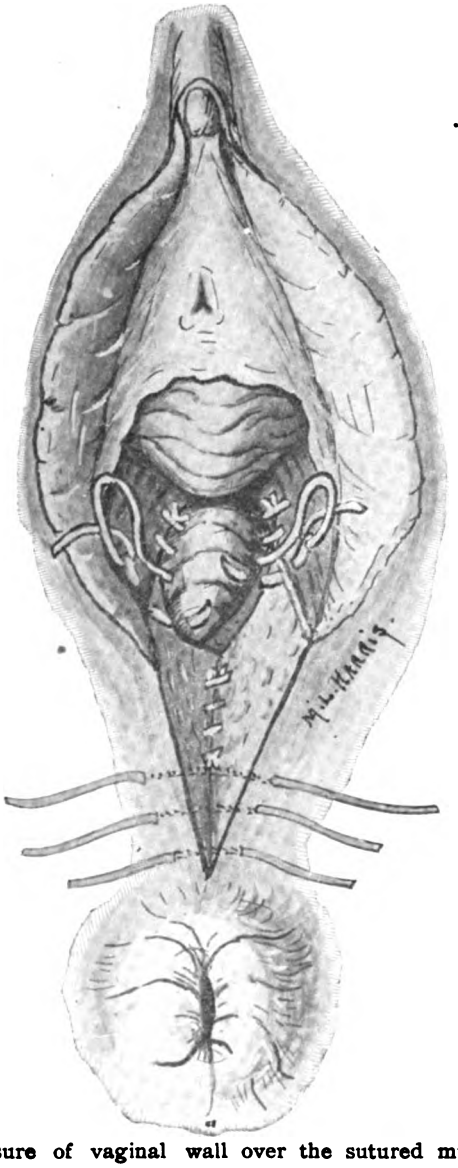

FIG. 9.—Closure of vaginal wall over the sutured muscle and of the perineum.

vagina, for a distance of 1.5 to 2 cm. within the hymen, is dorso-

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cephalad. At this point a distinct change in direction takes place and the vagina passes almost directly dorsad. The point of angulation lies opposite, and corresponds to, the perinæal flexure of the rectum, and is produced by the pubococcygeus and the puborectalis muscles encircling these organs at this point and drawing them forward, or in a ventral direction. (Fig. 2.) With the finger introduced into the vagina one is able to easily recognize the point of angulation, and to distinctly feel the edge of the puborectalis muscle through the lateral wall of the vagina as it passes in its course toward the symphysis.

An incision through the lateral wall of the vagina 1 to 2 cm. to the inner side of the hymen or its remains will expose the median edge of this muscle. It may easily be dissected up almost from its origin from the symphysis ossis pubis to the rectum, and in passing by the

FIG. 10.—Section of pubo-rectalis removed, showing complete rupture of muscle with separation of ends—actual size.

FIG. 11.—Section of pubo-rectalis removed, showing cicatricial union after laceration—actual size.

vagina its fibers do not enter or form an attachment directly into the vaginal wall. The muscle varies from 3 to 6 mm. in thickness, and extends, in connection with the pubococcygeus, laterally to the wall of the pelvis, the plane in the transverse direction being oblique to the wall of the vagina.

That portion of the vagina lying internal to the point of angulation or perinæal flexure, and which composes by far the major portion of the canal, lies in its ventrodorsal plane almost parallel with the muscular plane and rests on it, the rectum alone intervening.

Contraction of the muscles of this layer tends to increase the perinæal flexure of the rectum and vagina by drawing the parts in a ventrocephalic direction and the opening through the muscular floor is thereby maintained ventrad of the line of gravity. The weight of the pelvic organs is thus brought to bear on the muscular layer of the pelvic

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floor. That mass of tissue ordinarily called the perinæal body lying between the rectum and vagina, and extending from the muscular floor of the pelvis to the cutaneous surface, has little or nothing to do with sustaining the pelvic organs.

We will now proceed to a consideration of those lesions of the pelvic outlet resulting from extreme dilatation. It is sufficient to say that they are produced by the passage of the child during labor, without attempting to explain the mechanism. We may divide these lesions or lacerations into three classes: 1. Those involving the muscles of the pelvic floor. (Fig. 4.) 2. Those involving the tissues between

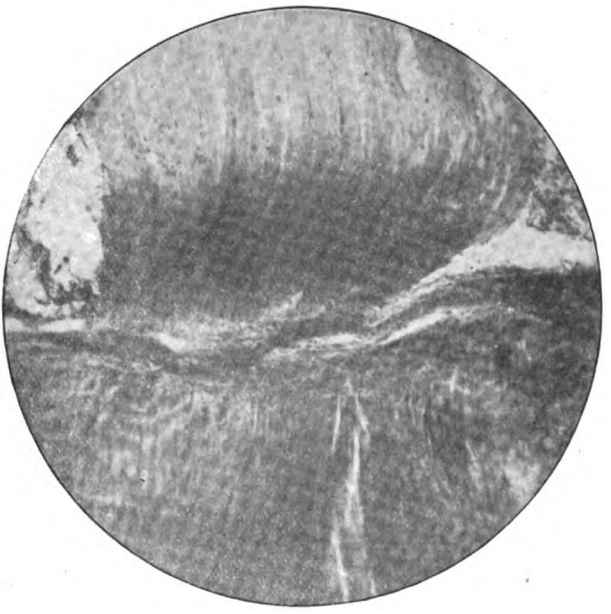

FIG. 12—Laceration of pubo-rectalis. Leitz obj. 3; eye. a.

the lower end of the rectum and vaginal opening, external to the muscular layer. (Fig. 3.) 3. A combination of these two. (Fig. 5.)

Lacerations of the first class may be compound, by involving the mucosa and wall of the vagina, or they may be entirely submucous. Each of the varieties may vary greatly in degree. This is a practical division of all lacerations, and such elaborate classifications as are found in some text-books—as, for instance, in Byford's twenty-three distinct varieties of laceration are described—are confusing and without importance. Lacerations of the second class are usually of little

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importance, except from a cosmetic or perhaps hygienic point of view, and they will not be further separately considered here. Our remarks will be limited to old lacerations of the muscular plane.

Schatz* was one of the first to call attention to lacerations of these muscles and the ill effects which followed the loss of muscular support. Since then many others have written about lacerations of these muscles with their fasciæ, but most of their statements have been founded on opinion unsupported by anatomic demonstration, hence are not always strictly in accord with the facts. As the caudal end of the spine in the human subject is much less movable than in the lower animals, we find the muscles which were active in moving this appendage in animals gradually becoming more fibrous or fascial in character in man as we approach the spine. As the extent of motion of the pelvic outlet or degree of laceration produced by the passage of the child at birth increases markedly as we proceed ventrally, we would expect to find lacerations more common and of greater degree in this portion of the pelvic floor; and such is true.

The puborectalis and ventral portion of the pubococcygeus are the muscles which must undergo the greatest elongation. In all cases of relaxation of the pelvic floor in which I have resected these muscles I have found lacerations of greater or less degree. Lacerations may take place in any portion of the length of the muscles, but are more common in that portion of the muscle which passes across the lateral wall of the vagina. It may be that the parietal bosses or the blades of the forceps are instrumental in determining, to some extent, the location of the laceration. The location of the laceration in the muscle does not necessarily correspond to the location of the tear in the vaginal wall, and the muscle may be extensively torn without the vaginal wall giving way at all. In fact, many, if not a large majority, of the muscle lacerations, are entirely subvaginal.

The lacerations may be multiple or single. Numerous slight lacerations may take place, as shown in the specimens under the microscope. (Fig. 12.) Here the separation from any individual tear is slight, but taken altogether produces considerable lengthening of the muscle. We may have a single, complete, transverse tear of the muscle, with wide separation of the ends, as shown in Figures 10 and 11.

This is a complete laceration of the left puborectalis with the ends separated at least 1 cm. The laceration may take place opposite the dorsolateral junction of the vagina and then corresponds to what some writers term detachment of the levator ani from the rectum. It is

* *Archives f. Gyn.*, 22.

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not a detachment of the muscle from the rectum, but a laceration of the puborectalis, just as it is about to curve posterior to the bowel. Lacerations may be lateral or bilateral. The effect of lacerations of these muscles is to produce a lengthening of the muscles with a loss of their mean effective contractile power. As a result, the ventrocentral portion of the pelvic floor moves in a caudodorsal direction. The vagina loses its perinæal flexure or angularity above mentioned. The major portion of the vaginal canal, instead of lying in a nearly transverse plane, slopes ventrocaudad. The posterior vaginal wall recedes from the pubic arch, and the ostium vagina is enlarged and lax. The finger no longer feels the firm edge of the puborectalis as it crosses the lateral vaginal wall. The perinæal furrow has lost much of its depth, and the anus, instead of being cut by a transverse line extending between the tuber ischii, lies posterior to this line. It is not the object of this paper to discuss the remote effects on the pelvic viscera of this change of position and loss of tone in the pelvic floor.

These lacerations of the muscles may be associated with laceration of the true or cutaneous perinæum, or this part may be intact. The correction of the condition resulting from these lacerations of the muscles must be sought in shortening the muscles torn; in a removal of the cicatricial tissue intervening between the separated torn ends, with a restoration of the continuity of the muscles.

The Emmet operation and all denudation methods of the vaginal orifice, which are the operations in almost universal use to-day, fail to restore, in any degree, the real pelvic floor. They are suitable in lacerations of the so-called perinæal body, but not when the muscles are torn. The method which I wish to present involves a resection of a portion of the puborectalis muscle so as to shorten up the pelvic floor. It is performed as follows: When laceration of the perinæum is present, the denudation of this part is made in the usual manner. (Fig. 7.) If this body be intact the denudation is omitted. An incision is then carried up each lateral wall of the vagina from 3 to 5 cm., a little posterior to the center. (Fig. 6.) The vaginal wall is raised in a flap each way from the incision. The edge of the muscle can now usually be felt, and an incision parallel therewith is made through the perivaginal connective tissue, exposing the muscle, which may easily be dissected out with the handle of a scalpel, blunt dissector, or the finger, ventrally, as far as the symphysis and dorsally until it curves around posterior to the rectum. Should the muscle have been so ruptured and its ends so retracted that its edge cannot be distinctly felt, the incision is made along the line which the muscle should occupy,

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and careful dissection made for separated ends. The ends of the muscle will be found connected by cicatricial tissue. I have not yet failed to find the remains of the muscle even when badly torn, and the ends widely separated.

The muscle may vary considerably in thickness, and, when very thin and ribbon-like, it may be torn by a careless dissection. When multiple small lacerations are present, the muscle will not be entirely separated at any point, but will be lengthened, loose and relaxed. In width or distance laterally, the muscle may be dissected from 3 to 5 cm. When it has been well freed, forceps should be placed on either side of the portion to be resected, so that the ends when cut shall not retract out of reach. The portion resected should correspond to the point of laceration if found, or when no distinct separation is found, to about the center of the muscle. The extent of the piece resected will depend on the amount of separation or the degree of lengthening and relaxation. It should be sufficient so that when the ends are drawn together the floor of the pelvis will be restored to its normal position and degree of tension. The ends of the muscle are then sutured together with an interrupted or continuous catgut stitch which, of course, remains buried. (Fig. 8.) The opposite side is treated in a similar manner, when the incisions in the lateral walls of the vagina are closed by a catgut suture. (Fig. 9.) This latter suturing should be thoroughly done so that no openings will remain through which fluids or infection may reach the deeper parts. When the perinæum has been torn, this is closed in the usual way. I generally close the deep portion with a buried catgut suture, and then use silkworm gut for the cutaneous surface. The hæmorrhage, in dissecting and dividing the muscle, is sometimes free but never great. It is very essential that all hæmorrhage be completely controlled before closing the wounds, so that a hæmatoma may not develop in the deep parts and compromise the results of the operation. The subsequent care is that usual after a perinæorrhaphy.

This operation restores the pelvic floor to its normal position. The vaginal opening is carried ventrad, the angularity or perinæal flexure of the vagina returns, the posterior wall of the vagina loses its sagging and becomes more nearly horizontal again, and a good support is reestablished. The clinical results have been very good. The muscles retain their active contractile power, and their elevating and sphincteric action at the vaginal opening is again restored and well maintained.

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TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, November 17, 1899.

The *President,* Dr. THOMAS J. WATKINS, M.D., in the Chair.

Myomectomy: Exhibition of Specimens.

Dr. HENRY T. BYFORD: I have three specimens from cases of hystero-myomectomy, removed within a week of each other, illustrating the possibilities of conservative operations for the removal of uterine tumors. The largest specimen was from a case in which the tumor was subperitonæal and occupied the entire pelvis and lower abdomen, pushing the uterus above the pubes and embedding itself firmly in the pelvic connective tissue.

The arteries could not be found and the veins were large and very numerous. I could not locate the uterine artery at all, and I do not think that Prior's method of first ligating the opposite broad ligament and cutting through the cervix would have been any better, because there were so many vessels passing into the tumor and the tumor was against the pelvic walls. Twelve pairs of forceps about the base of the broad ligament were required to check profuse hæmorrhage, for as the tumor was enucleated free bleeding occurred from many points. That side of the pelvis filled twice with blood before the bleeding was controlled by the forceps. Myomectomy was the better method, for the broad ligament could better be stitched up into the wound and the peritonæal cavity shut off from the forceps and oozing tissues, than if the uterus had been removed. The patient is now walking about and the wound cavity almost obliterated.

These specimens are from a case in which the intestine was adherent to the tumor. This one which is the size of a child's head grew from a large surface near the fundus; here are eight more tumors, which were taken from different parts of the uterus. Two were pedunculated and the others had a large base. There is nothing particularly noteworthy in the tumors, except their number and the fact that the uterus was left in good shape. The convalescence is so far (ten days) remarkably normal. The time consumed in operating was scarcely (if any) longer than in ordinary cases of complete extirpation.

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The third case was one of vaginal myomectomy in a virgin 36 years old, the larger tumor being, as you see, the size of a goose egg. It was removed from the anterior uterine wall, at the fundus, and the other from the posterior uterine wall. By anterior colpotomy, the fundus was readily drawn down into the vagina and the tumor removed. This left a denuded surface about the size of a dollar, which was sutured with catgut. The tumor on the posterior surface was deeply imbedded in the wall but was easily removed and the wound closed by sutures. In this case I could not only get at the tumor better through the vagina than through the abdomen, but I shut off the peritonæal cavity completely from the field of operation by suturing the bladder peritonæum over the uterine stitches.

Ruptured Extra-uterine Pregnancy: Exhibition of Specimen.

Dr. McDiarmid: I present this specimen from a case of extra-uterine pregnancy. The ovum has developed in the ampulla of the tube. The walls of the tube appear thickened, which probably accounts for the non-descent of the ovum. The ovum presents the chorion with its villi, and the minute embryo can be seen within.

Rupture occurred presumably about the eighth week of pregnancy. Patient aged twenty-six years. Married eight years. Has one child 5 years old. Has had three abortions, the present being the fourth pregnancy since the birth of her child. She weighs 206 pounds when in health.

Her last menstruation began August 17th and ceased on the 20th. Hæmorrhage began October 10th and consisted of a mere show each day. Pain began on Thursday, October 19th, when she took to bed. Vomiting began Friday morning. At 4 P. M. on Sunday her physicians curetted the uterus and on Monday, October 23d, about 2 P. M. I saw her in consultation. I found her with pulse 176, with excessive vomiting and great shock. A mass could be felt in Douglas' cul-de-sac. I had her removed immediately to the Post-Graduate Hospital. On opening the abdomen I removed a hatful of clots and fluid blood. I brought up the ruptured right tube and ovary and ligated these, whereupon I encountered excessive venous hæmorrhage, which I had considerable difficulty in arresting. Pressure on the femoral vein by an assistant finally controlled it while I secured the lesion on the pelvic wall, extending up to the brim, with several artery forceps and ligated it in sections. I introduced a glass drainage-tube, which remained sixty-four hours.

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During the operation she received sub-mammary infusions of normal salt solution to the amount of five quarts, the internes inform me, and at the close of the operation two quarts per rectum. About two hours later her pulse having reached 180, she received another quart sub-mammary. Next day her pulse was 122 and the third day 100, and she made a continuous recovery, leaving the hospital on the seventeenth day.

I would call attention to two or three points. This case does not accord with the commonly accepted opinion that ectopic pregnancy occurs chiefly after a protracted period of sterility. Neither was there a discharge of decidual fragments, although such would scarcely be expected at so early a period. The failure to diagnose the case at an earlier period was therefore quite excusable. Her physician had diagnosed ectopic pregnancy before I saw her.

I wish to emphasize the necessity for immediate operation in cases of hæmorrhage with great shock, rather than the attempt to stimulate and rally the patient, hoping for a better condition for operation. This patient would have died in a very short time.

I would also refer to the inadequacy and danger of the vaginal route for an operation of this character.

In reviewing the case I inquire whether had I been more deliberate, first drying the pelvis thoroughly, and delivering the sac under the eye, I would have avoided the hæmorrhage. I scarcely think so. No force was required in bringing up the tube. The saline infusion is invaluable. Without it we would doubtless have lost this patient's life.

Discussion.

Dr. Emil Ries: There are two points worthy of consideration. First, the fact that there was no discharge of decidua. If I understand the doctor correctly, the patient was curetted before he saw her, and, of course, the decidua was destroyed, hence could not be expelled. Second, another point of importance is, whether such a case could be operated on through the vagina.

I have recently operated on two cases through the vagina, both early extra-uterine pregnancy. One had been curetted twice for supposed intra-uterine incomplete abortion; another had been diagnosed as a pyosalpinx. In both cases there was pelvic hæmatocele, rupture of the tube with the fimbriated end wide open and placental polypus in the tube. I cut and tied the tube from below quite as readily as it could be done from above, and with but little hæmorrhage. The pa-

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tients had the usual benefit of the after-treatment after vaginal operation, getting up on the second day, and leaving the hospital about the sixth. I can see no reason why the doctor's case could not have been operated upon from below, as the tube and ovary are not very large, and the uterine and isthmic portions of the tube are strong and solid, so there would have been no difficulty in disengaging the tube and ovary from the broad ligament.

As to the hæmorrhage from the broad ligament, I believe that operation from below would have obviated this. I control the hæmorrhage from the ovarian artery by suture, and if we continue the suture of the broad ligament parallel with cutting away the tube from the broad ligament, there is no difficulty from hæmorrhage. The fimbriated end of the tube in the case under discussion seems to have been open, thus making another one of those interesting cases in which pregnancy could have been terminated by tubal abortion, but preferred to rupture through the tube wall. These cases may find their explanation in the engagement of the ovum in a diverticulum of the tube wall. Whether or not this diverticulum is due to a pathological process, or double formation of the tube as described by Landau and Rheinstein, would have to be determined by microscopical examination.

Dr. Henry T. Byford: I believe it is very easy to operate through the vagina in early cases, although as the parts are soft they are readily torn if they are not handled gently. It is easy to stretch them and bring them into view, and as a rule the regulations are very simple. The danger is in not recognizing the existing conditions and handling a pregnant case too roughly. I do not see any reason whatever why we should not be able to operate on these cases from below when the tumor can be felt low down, and when conditions that are unfavorable to vaginal sections are not present.

Dr. Reuben Peterson: Whatever may be one's predilections for the abdominal or vaginal route, it must be conceded that these cases can be operated very nicely through the vagina. While I have always operated through the abdomen by pulling down the uterus and bringing the tube and ovary through the vaginal opening, I do not see why hæmorrhage cannot as easily from below as from above be controlled in suitable cases. As far as I am concerned I prefer operating through the abdomen, as I feel I can do much better work in this class of cases through a suprapubic incision.

I would not like to have it go out as an opinion endorsed by all the members of this Society, that one of the advantages of the vaginal operation is that the patient can get up on the second day and walk

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out of the hospital on the sixth. I must confess that Dr. Ries' cases do very nicely. They are remarkably pedestrians; they do walk out and very few are carried out. I, however, do not believe that patients ought to be let up so early, and Dr. Ries will find out sooner or later that he is doing them harm. Cases of extra-uterine hæmorrhage especially always profit from rest in bed. Not only does Dr. Ries let his vaginal cases get up on the second day, but his abdominal cases as well. Where the stitches are not taken out for four to six weeks after the operation or if a sure method of their suturing be employed for the abdominal wall, there is no special reason why the patient should not get up early, as far as the danger of subsequent hernia is concerned. But unless the proper method of suturing be employed there is the greatest danger of subsequent hernia. This is not the occasion for a lengthy discussion of this subject. I merely wish to protest against the idea that the chief aim of the operator is to employ a method whereby his patient gan get up in the quickest possible time after the operation.

Dr. EMIL RIES: As this is a discussion of Dr. McDiarmid's paper, I do not wish to discuss my after-treatment of these cases. I would, however, like to have Dr. Peterson discuss a case of removal of the tubes and ovary, which went home on the seventh day, and which I shall present at the next meeting.

Dr. MCDIARMID, closing the discussion: I do not quite understand Dr. Ries' remark with reference to the decidua and curettement.

Dr. RIES: The decidua is the lining membrane of the uterus. If the uterus is curetted, the lining membrane is removed; nothing is left, but the muscular tissue and small pieces of uterine mucosa which dipped down into the muscle.

Dr. MCDIARMID: In what way is that applicable to any remark of mine?

Dr. RIES: You said the uterus was curetted.

Dr. MCDIARMID: Quite true, but that was done the day before. I said that there is usually supposed to be a long period of sterility prior to the occurrence of extra-uterine pregnancy. This was not true in my case. Next, we frequently have expulsion of portions of decidua. That was wanting in this case. There could, of course, be no expulsion of decidua after curettement, which was made twenty-four hours before my operation.

Dr. RIES: And the rupture occurred?

Dr. MCDIARMID: I cannot say. Her physician curetted on Sunday and I operated on Monday. I imagine that the rupture took place on Thursday, when she had an attack of pain and took to bed. On

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Friday she vomited and on Saturday and Sunday, more after the chloroform and curettement than before. Some hæmorrhage may have occurred on Friday, Saturday and Sunday, but doubtless more after the curettement.

Dr. RIES: I thought you referred to the decidua after curettement and not before. If the rupture took place twenty-four hours before you operated the discharge of the membrane would have occurred sometime after the rupture. No membrane could come away after curettage. That was what I referred to, while you referred to the discharge of decidua during the course of the pregnancy.

Dr. MCDIARMID: I merely wish to add that I do not believe any difficulty would have been encountered in removing the pregnancy from below. I intended to refer only to the control of the hæmorrhage afterward.

Enormous Appendiceal Abscess incised through the Rectum.

Dr. REUBEN PETERSON: With the permission of the Society, I will report a case of enormous appendiceal abscess, which I operated upon recently. As it occurred in the male, I must apologize for reporting it before this special Society, but the same might occur in the female, and a discussion of this special method of operating may be profitable.

The patient was 26 years old, and when Dr. Bischoff, who kindly referred the case to me, first saw him had been sick for a week with symptoms of appendicitis. As the patient would not consent to an operation the doctor was obliged to watch an abscess gradually increase in size for two weeks. Finally, his condition became so bad that he was persuaded to enter the hospital, where I saw him that afternoon. His pulse was about 100; temperature 99½; the abdomen was literally filled with a fluctuating tumor, reaching within one and one-half inches of the umbilicus and filling up the right side completely. It extended almost to the iliac crest on the left side, simulating an enormously distended bladder, except that the area of flatness was greater toward the flanks.

I made a rectal examination and found that the pus had burrowed down into the pelvis so as to even dilate the sphincter, for upon inserting my finger only about one-quarter of an inch it struck the sac. I operated within a couple of hours, making an opening through the rectum. There was so much tension to the sac that when it was excised the pus leaped two or three feet. There was over a gallon of

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very foul smelling pus. I enlarged the rectal opening in order to get into the cavity, which was lined by coils of intestines. The next day the temperature had risen to 102°, the pulse to 120. I had seen this occur before where large pelvic abscesses were opened and I thought it due to the collapse of the sac, and the removal of pressue from the absorbing vessels. The temperature and pulse remained stationary for about two or three days, although there was a free discharge from the rectum. Three nights after this operation he filled his bed with what the interne said must have been two or three quarts of pus, and the next day temperature and pulse were normal.

On the sixth day (and unintentionally) I was obliged to follow the plan adopted by Dr. Ries. The patient complained of the hospital food and promptly walked home, a distance of about one and one-half miles. I learned from Dr. Bischoff that he went on to a rapid recovery and is now at work.

I once operated upon a boy of twelve, opening a very large appendiceal abscess through an abdominal incision. I cannot help contrasting the convalescence of the two cases, for while the boy eventually recovered, it was only after a long period of time, while the case opened through the rectum made a quicker and more satisfactory recovery.

As a general rule I would consider it unwise to employ the rectal incision, and would limit it to those desperate cases where the abscess sac is large and has worked its way within easy reach through the anus.

Discussion.

Dr. Henry T. Byford: It is no doubt better surgery to operate from above or through the vagina or perinæal body in ordinary cases. However, the rectum is not any more septic than the abscess, and nothing worse can get in than is already there, and when drainage is good, abscesses discharging into the rectum always heal, unless kept from doing so by ligatures, tuberculosis, etc. It might occur to us that the doctor could have incised the perinæum over the sphincter and have kept in front of the anterior wall of the rectum. But the result proves that there was no harm in opening by way of the rectum. The principle is not to keep the germs out, but to let them out. I have by rectal incision opened pelvic abscesses, which were a distance from the outside and were separated from the vagina by indurating tissue, but which were bulging into the rectum. By maintaining the opening, I have never failed to get a good recovery. I have had the opening

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contract and the septic condition commence again, but that was easily remedied by dilating the opening. One principle evolved from the theory is to avoid opening by way of the rectum if possible, but one fact evolved from practise is that they get well when adequately drained into the rectum.

Dr. MANIERRE: I would like to ask Dr. Peterson whether he put a tube into the cavity.

Dr. PETERSON: No, I did not. In order to get good drainage I made the opening large enough to admit several fingers.

Dr. FRANK T. ANDREWS: Cases of appendicitis in which abscess can be opened through the rectum are, I believe, extremely rare. The large majority of abscesses in the female would be pelvic. I would like to take issue with Dr. Byford about abscesses healing by contraction of the wall of the abscess. Of course, it contracts to a certain extent, but any cavity within the abdomen, shut off from the general peritonæal cavity, is closed primarily by intra-abdominal pressure, and not at all, or to a small extent, by contraction of the tissues in the wall. In order to get a very rapid and complete closure, it is necessary that the sac be thoroughly emptied.

Dr. HENRY P. NEWMAN: I simply wish to refer to the fact that William H. Byford, Senior, many years ago advocated draining pelvic abscesses through the rectum, so that the method in one sense is not new. It was quite a favorite method of his to dilate old sinuses and drain abscesses through the rectum.

Dr. A. H. MCDIARMID: Several years ago I had a case of appendiceal abscess which ruptured through the vagina. This is somewhat rare and I should like to know whether any of the members of the Society have had such a case.

Dr. EMIL RIES: The question of opening these abscesses through the rectum, be they of appendiceal origin or from the appendages of the female, is now practically decided in the direction of avoiding the rectal incision. I am well aware that a number of cases heal after they have been opened through the rectum. The general experience with cases of pyosalpinx, which have perforated into the rectum, is that this perforation is one reason why these abscesses do not heal. I have had opportunity to examine a number of cases of recent puerperal infections on the post-mortem table, and the perforations, though small and permitting of the escape of pus, prevented a closure of the sac. The danger is the formation of a fistula, permitting the septic contents of the rectum to enter the sac. This is especially the case when the tissue around the rectum, which solders the pus-sac to the rectum, is hard

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and firm, not favoring ready contraction. Where we have to deal with recent abscesses, as in the case reported by Dr. Peterson, it is more likely that these fistulæ will close rapidly by contraction of the rectal wall, the bowel coming down and filling in the space previously occupied by the pus. I would submit, as an important consideration in the treatment of pelvic abscesses, especially in cases of long standing, that not the rectal incision but one which avoids the septic field is preferable—in the female through the vagina, and in the male by perinæal section if necessary.

The fact that the patient got up after six days is, of course, deplorable from the doctor's standpoint, and I fully sympathize with him.

Dr. Weller Van Hook: Abdominal abscesses should, as a rule, be opened at such points as will permit the operator to treat the point of origin of the process. This rule need not be violated in treating large abscesses filling the pelvis, cases occurring frequently in the practice of the general surgeon, since local anæsthesia suffices where narcosis is not permissible.

Dr. Peterson, closing the discussion: I simply wished to place this case on record, because of the large size of the abscess and the possibility that by opening through the abdomen the shock of the operation would be a factor against his recovery. I have always been opposed to opening pelvic abscesses through the rectum, because of the reasons stated here to-night. I brought this case to your notice in order to demonstrate the fact that in recent abscesses of this nature, opening at a dependent point will sometimes result in a cure of the case.

Foreign Body in the Bladder: Report of a Case.

Dr. S. L. Weber: Foreign bodies in the bladder are not always easily removed without incision, and even then it is difficult. A patient of mine, having some puritus around the urethra, used a large-sized pin with which to scratch herself. The pin slid into the bladder. I saw her the next day and took her to the hospital. She was anæsthetized and after dilating the urethra and inserting my finger, I could distinctly feel the pin, which I was able to grasp and turn so as to get hold of the head, and then take it out.

Pregnancy with Bicornate Uterus: Report of a Case.

This case occurred in a primipara. The first stage of labor lasted four days and on the fifth day, with the aid of forceps, a healthy nor-

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mal child was delivered. I was unable, even by Credé's method, to bring away the placenta. It seemed to be close to the abdominal wall; much more so than usual. Upon inserting my hand into the uterus I found the placenta on one side, suggesting a double uterus, adherent and high up. I was forced to dissect with my finger when I felt that the uterine wall was extremely thin at that point. She made a perfect recovery. I had occasion to examine her since, when I found a double-horned uterus.

DISCUSSION.

Dr. GUSTAV KOLISCHER (by invitation): The finding of foreign bodies in the female bladder is not uncommon. I wish to object to forcible dilatation of the urethra with the patient under general anæsthesia, in order to make a diagnosis or to remove small extraneous bodies from the bladder. It is by no means a harmless interference, but a rather obsolete and barbaric procedure, not to speak of the danger of narcosis. At the present time we have at our command cystoscopes, which meet all demands, without the necessity of dilating the urethra and putting the patient under general anæsthesia.

A Plea for a More Surgical Practice of Obstetrics.

BY SAMUEL WEBER, M.D.

(See page 1.)

DISCUSSION.

Dr. HENRY P. NEWMAN: This summary of obstetrical work ought not to pass without some comment. In the main, it agrees with my ideas of handling obstetrical cases. A large number of these should be treated with aseptic precision of surgical cases. Most of these are confined in low beds, and the after-work, be it major or minor, is likewise frequently performed in bed. We certainly would not think of doing surgical operations in that posture or with such appointments. If the after-work is worth doing at all, it is worth doing well, and this cannot be done in an awkward position or in a low bed. I have always advocated placing the patient in the proper position on the table. True, there is a good deal to contend with both from the physician and patient's standpoint, but this should not weigh against the betterment on this class of our work. In our city-bred women, normal labors are

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the exception rather than the rule, and the injury or trauma arising is the cause of subsequent, if not immediate, disturbances.

Much of this can be corrected by the application of prompt and strictly surgical principles in each individual case as the necessity arises.

Dr. GUSTAV KOLISCHER (by invitation): The doctor stated that all the chiefs of large maternity hospitals and clinics publish statistics, which are of no use to the general practitioner as these statistics are based on a quite different material from that in private practice. That is quite incorrect. These statistics not only refer to those women who are delivered in the maternity hospital, but also to those who are delivered on the outside by assistants and internes who are delegated from the clinics, and in all these statistics the different morbid conditions are referred to. Furthermore, the doctor states, that the condition of women who are kept in maternity hospitals are much more favorable; these women, he claims, are by no means as often afflicted with gonorrhœa as patients in private practice, and he says we would find quite a flora of pathogenic germs in the vagina of the women in private practice if we would search for them. Such statements, I think, should be backed by a large personal experience and by extensive and painstaking researches. I think it is quite wrong to say "that we would find" such and such germs in so and so many cases. A scientific man says "I have found" and I am drawing my conclusions from these findings. We have not only healthy women to deal with in large maternity hospitals; on the contrary, a great many of these women are afflicted with gonorrhœa and other troubles. I doubt that the doctor's statement that every second parturient woman in private practice is gonorrhœic is true.

Concerning the after-treatment in puerperium, the doctor advocates in cases which might have been infected or which are liable to be infected later on, because gonorrhœa exists, daily flushing of the uterus. I am pretty sure he is the only obstetrician advising such a procedure. Flushing of the uterus in the puerperium is a very peculiar procedure, which is always followed by a severe chill and sometimes by collapse. I think it quite unnecessary to mention before a society of specialists that we ought to be careful in the matter of disinfecting our hands and instruments.

The doctor's demand that obstetrical work should be reserved for specialists is a utopic one; the profession will never be able to furnish a sufficient number of specialists to attend to all obstetrical cases.

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What we need are more public lying-in hospitals, where the general practitioner can get a thorough training in obstetrics.

It seems to me that statements should not be made before this Society which are not based on good and sufficient experience and researches, especially when they are in contrast with the experience of men who are not only well trained for specialistic work but who have also at their command a staff of internes, fully conversant with pathologic and bacteriologic examinations.

Dr. CHAS. E. PADDOCK (by invitation): Judging from the title of this paper I thought Dr. Weber would take up the use of forceps, or show us some method by means of which we could prevent lacerations. In order to prevent inevitable tears, especially in primiparæ, I am in the habit of performing episiotomy, that is, nipping the vulva. This incision can be easily mended, whereas a tear down through the rectum requires the services of the skilled gynæcologists to properly repair it. The ordinary practitioner cannot repair a perinæal tear as well as an incision of the labia. I have never known these wounds to heal otherwise than by first intention.

I wish to commend a great part of the paper, but I am very sorry that the doctor has taken issue with all obstetricians on one point, and that is in regard to the uterine douching. He is the only man I have ever heard advocating that procedure. In regard to vaginal douches, they should be prohibited only in such cases where we know we have an infection. The simple douching of the perinæum and vulvar orifice is advisable in all cases.

Do not douche the uterus or vagina following labor, or if it must be done, do it yourself and do not leave it to the nurse.

I agree with the doctor as to the delivery of the patient. It is an easy matter to carry the woman onto a table, especially where an operative case is at hand.

Dr. C. S. BACON: I gather from Dr. Weber's paper that he intends to say that a more surgical practice of obstetrics means better antisepsis and asepsis; means the careful cleaning out of the uterus; means the careful repair of tears. We may all admit that better antisepsis is desirable, but to call the practice of antisepsis a surgical proceeding is a misuse of terms. I do not believe that the obstetrician will allow that surgery has a monopoly of antisepsis, especially as the beginning of antisepsis was with the obstetrician. We all admit that laceration should be repaired carefully, thoroughly and surgically, and the method detailed is a part of surgical obstetrics. Obstetricians must, however, call on all other branches of medicine for assistance.

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It hardly seems possible that the recommendation for conducting ordinary cases of labor with the patient on a table was made seriously. The cleaning out of the uterus in all cases would be a very dangerous and harmful procedure. That this should be done in those cases where there is a septic condition, is particularly objectionable. Where there is a suspicion of gonorrhœal or other infection, there is exactly a case where we would avoid interference. When Dr. Weber's method of procedure is based upon the proposition that infectious germs are often found in the genital tract, without proof for such a statement, he is hardly in accordance with accepted scientific methods.

Dr. Reuben Peterson: It was my intention to criticise the doctor's paper rather severely on some points, but Dr. Kolischer has anticipated me. I wish, however, to endorse what he has said regarding counselling the general practitioner to observe more cleanliness in his obstetrical work. I agree with the doctor that in late years puerperal sepsis has not declined to any great extent. The mortality from puerperal fever has been lowered, but puerperal sepsis is still very prevalent. This sepsis is in many cases due to a lack of cleanliness on the part of the accoucheur. Many general practitioners, when delivering a woman, believe their hands to be surgically clean. From observation, however, we know that this is not true. The hands are washed for a minute or two in a very superficial way. In the majority of cases they do not carry, in their obstetrical bag, a nail-brush, but depend entirely upon the septic article employed for all sorts of purposes in the household.

It is highly essential that the profession be urged to observe stricter surgical cleanliness in the conduct of their obstetrical work, and this I believe was the doctor's main object in presenting this paper.

Dr. Frank T. Andrews: Whenever we wish to get an object through an opening, we dilate that opening, and I would like to ask Dr. Weber why obstetricians do not adopt some means of slow dilatation prior to the period when the child's head comes so swiftly and tries to force its way through the narrow opening.

Dr. Henry P. Newman: I did not hear all of the doctor's paper, but learn from the discussion that some points have been brought out which I cannot endorse. I do not believe in interfering with normal labor, nor in any case unnecessarily with the uterus or vagina; but where indication exists, the interference should be done with the same precautions, and with the same antiseptic details that pertain to surgery in general.

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The Repair of Old Lacerations of the Pelvic Floor.

By M. L. Harris, M.D.

(See page 6.)

Official Transactions.

C. S. Bacon,
Editor of Society.

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CRANIO-RHACHISCHISIS.*

By Henry F. Lewis, A.B., M.D., Chicago.

Defective closure of the dorsal commissure of the body results in a wide series of malformations and monstrosities. The opening may occur at almost any part of the cerebrospinal axis from the root of the nose to the tip of the coccyx or may even be complete along this whole extent. The essential point is a defect in the bones covering the brain and spinal cord. The defect varies in extent from the minutest spina bifida to the complete absence of bony covering over the whole of the central nervous system.

Monstrosities of the general class of cranio-rhachischisis are classified according to the place in the bony covering of the cerebrospinal axis in which the main defect occurs, and according to the extent of atrophy of the tissues of the brain and cord consequent upon such defect. The points of classification are neither constant nor rigid and the limits of the different species are indistinct, but, in the main, we can divide the individuals of this kind into genera and species. A classification according to etiology is not yet possible because there is still so much to learn in that direction and because the same cause, acting at different times or in different regions, may produce vastly different ultimate results. It is useless to go into the niceties of classification in these monsters, niceties the refinement of which has been carried by many writers to an absurd point. It will be enough to indicate broadly the general lines dividing the species.

Three large classes are at once apparent, one characterized by a more or less complete absence of brain, namely, the anencephalia; another characterized by the presence of a more or less complete brain but one placed wholly or in part outside of the cranial cavity, namely the exencephalia; and a third, the spina bifida, where the chief defect is in the dorsal plates of the vertebræ. The last may and often does coexist with either of the others. Retroflexion of the fœtal body, causing foreshortening of the dorsum and sometimes other malformations in addition, occurs in all three of these genera, and, as we shall see later, probably has an etiological significance. In addition to the cranio-rhachischisis there is often some other anomaly or defect of develop-

* Inaugural Thesis.

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ment, such as club-foot, hare-lip, cyclops or loss of limb. These points also probably have a bearing on causation.

Most of the cases illustrating this article are from the museum of Rush Medical College; a few from the Chicago Medical College. They were dissected by myself, with the able assistance of Dr. Louis J. Mitchell, by permission of Professor Ludvig Hektoen of Rush College and Professor Fütterer of the Chicago College.

The anencephalia may be divided into two species: those with retro-

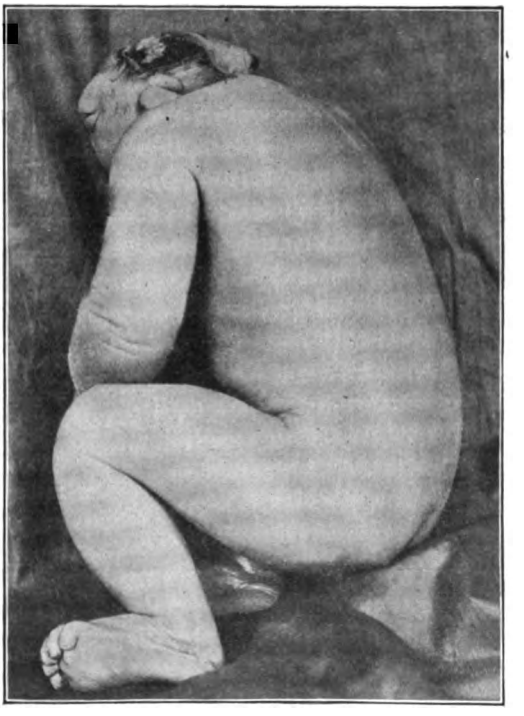

FIG. 1. Anencephalus.
(Museum of Rush Medical College.)

flexion of the fœtal body and those without. The former is more often accompanied by considerable spina bifida, while in the latter the vertebral canal is usually open only for a portion of the cervical region. The term hemicephalus is often used to designate these so-called "half-headed" monsters, but the term anencephalus, meaning "without brain," is better.

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Pseudencephalus is the term used to indicate that there are perceptible remains of cerebral or meningeal tissue lying on the base of the skull. It will very seldom happen, however, that absolutely none of such tissue can be made out upon careful inspection and dissection. As will be shown later, the existence of fœtal retroflection or its absence may be due to difference in the ætiological factors.

The anencephalia are by far the most frequent monsters and reports of their occurrence are abundant in the literature. In most cases, however, the reporter gives very meager items about the history of the labor, the measurements of the child, and especially the dissection. Apparently he often hesitates to accomplish the last for fear of marring

FIG. 2. Anencephalus.
(Museum of Rush Medical College.)

the artistic beauty of the specimen. Much space is usually devoted to remarks upon the rarity or even the "unique" character of his case and to metaphysical speculations about its causation.

Breech cases seem to occur more frequently with anencephali than with normal fœtuses and prematurity is the rule. Even when the vertex presents it is difficult to determine the position because of the unfamiliar feeling of the parts. The bony outlines of the temporals on either side and the soft mass of membranes and blood vessels between give much similarity to the feeling of a breech. The idea that the pressure of the examining finger on the exposed cranial nervous

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tissue causes violent movements of the fœtus on account of stimulus to the motor nerves does not seem to be born out by the reports.

Because of the absence of a brain to direct the vital functions anencephali never live more than a few hours or minutes. On the other hand, if near full term their bodies are often remarkably well developed and well nourished, even abnormally so, as in Fig. 1. It would seem that the trophic influence of the brain is not needed for development *in utero* and that death occurs soon after birth because of the failure of adjustment of circulation and respiration. The cranial

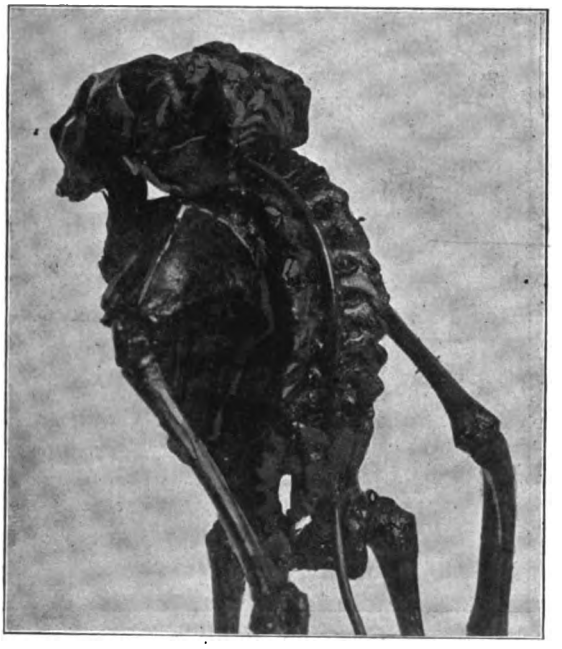

FIG. 3. Skeleton of Anencephalus, as in Fig 2.

nerves are present and even in extensive spina bifida, where the cord is flattened out exceedingly and much atrophied, the spinal nerves are all intact.

The museums throughout the world are rich in anencephali, and so, too, are those of this city. A few specimens illustrating the different forms I shall briefly describe.

Case I.—This is a fœtus at about the eighth month of gestation, measuring 10½ inches in length (Fig. 2). When we remember that this

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specimen lacks everything above the base of the skull and that its body is foreshortened by the retroflexion we shall see that it corresponds to a normal fœtus of about fifteen inches. The sex was female, as is the case in more than three-fourths of all anencephali. On account of the marked lordosis and tilting backwards of the head, the neck furrow is obliterated and the head seems to sink deeply into the shoulders. As usual, this lordosis is greatest in the cervical region so that here is left a deep, empty cavity in the vertebral canal. There is no cranium be-

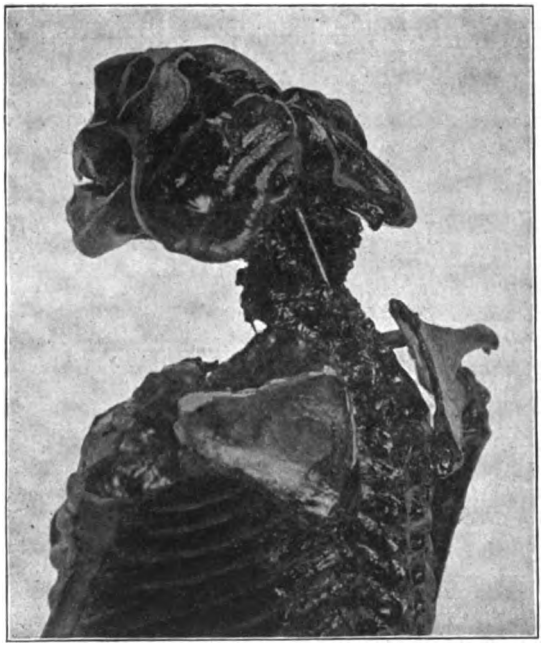

FIG. 4. Anencephalus.
(Museum of Rush Medical College.)

yond the eyebrows, no medulla and no brain except the remains of a ruptured membranous sac covering a few fibers lying on the base of the skull. A fringe of hair extends in a horse-shoe form from the mastoid processes forward over the rudimentary frontal region. Behind the skull is covered with membrane, which extends over the open vertebral canal to the first lumbar vertebra. The spina bifida reaches to the tip of the sacrum. The opening measures 1⅜ inches anteriorly and 1¼ inches at the first lumbar vertebra. The flattened fibers of the spinal

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cord lie upon the base of the wide and shallow vertebral canal underneath the membrane. The skeletal preparation (Fig. 3) of this specimen shows the condition of the cranium and of the vertebræ, as well as the retroflexion of the fœtal body.

Case II.—A female fœtus of about the seventh month, showing similar conditions to the preceding, except that the spina bifida only extends so far as the middle of the dorsal region; there is less marked retroflexion, there is a pituitary body present, and slight rudiments of

FIG. 5. Anencephalus.
(Museum of Rush Medical College.)

cerebrum in the anterior fossa. As before, the open skull and vertebral canal are covered by a continuous membrane.

Case III.—A male fœtus between the eighth and ninth months, having entire absence of brain, spina bifida to the first dorsal vertebra, obliteration of the neck furrow and retroflexion of the body in the cervical region. There is a marked anterior curve to the cervical spine. There is no medulla and the cord ends upwards at the first dorsal vertebra.

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Case IV.—A female of about the seventh month or less. The cranial vault is entirely wanting; a membrane covers the rudiments of cerebrum and cerebellum. There is a slight lordosis of the cervical vertebræ which causes the head to appear as if forced down between the shoulders, but there is no marked retroflexion of the fœtal body. The spina bifida extends only to the third cervical vertebra.

Case V.—A female seven months' fœtus with complete absence of calvarium. The base of the skull is covered by a membrane as far as the cervical region. In the anterior fossa are scanty rudiments of brain with some blood clot. The spina bifida involves only the atlas and axis, and there is no tilting back of the head nor retroflexion (Fig. 4).

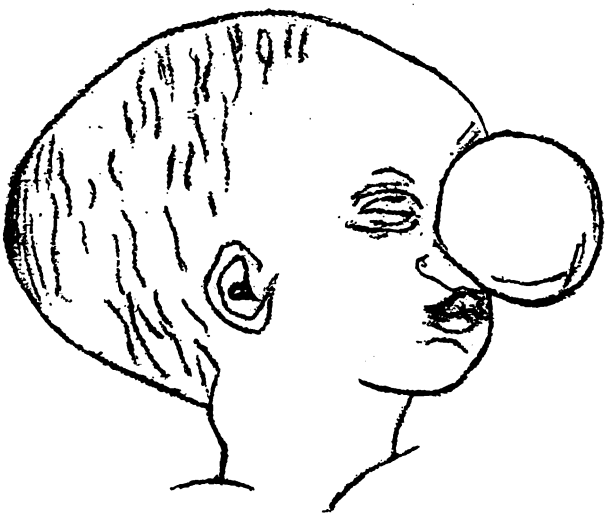

FIG. 6. Proencephalus.
(Ahlfeld's Atlas.)

Case VI.—A female of nearly full term, without cranial vault and with base covered by membranes under which, in the anterior fossa, are the minute traces of brain. There is no fission of the vertebral canal and no retroflexion, on the contrary, the slight kyphosis in the cervical region causes the head to tilt forward and marks a very distinct neck furrow, so that the chin rests on the chest (Fig. 5).

Case VII.—A female (Fig. 1) of full gestation and remarkably well nourished but showing complete absence of calvarium, cerebrum and cerebellum. There is a slight trace of medulla and pituary body. The base of the skull and the vertebral canal are covered by membrane

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as far as the third cervical vertebra where the spina bifida ends. The base of the skull rises above the level of the surrounding parts of the forehead and sides, which are covered with a fringe of hair.

In all these anencephali there is a considerable shortening of the base of the skull as well as absence of the bones of the vault. The bimastoid and the occipito-mental diameters are much less than would be expected in fœtuses of the same age and development. The base

FIG 7. Hyperencephalus or Podencephalus. (Shefeld.)

of the skull is usually more concave than normal; sometimes convex in the center and concave at the periphery. This abnormal curving results probably from the lack of controlling pressure of a growing brain held under a vault of bone. Thus the edges of the base of the skull curl up, as it were, so that the ears are brought nearer to each other, the nasal bones nearer the occiput, and even the eyes closer together. Since the supraorbital ridges are the topmost parts of the

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skull they make the eyes appear very prominent and give the appearance so often alluded to of an owl or a frog.

The genus exencephalia is divided into species according to the place in the cranium where the bony defect is and whence escapes the cerebral tumor. This tumor is called meningocele if composed af brain membranes containing fluid, and encepolocele or hernia cerebri if con-

FIG. 8. Hyperencephalus. (Face View.)
(Museum of Rush Medical College.)

sisting wholly or partly of brain tissue. The species are designated proencephalus, hyperencephalus, iniencephalus, notencephalus, and exencephalus proper.

According to Raab (*Wiener med. Wochenschr.*, Nos. 11, 12 and 13, 1898) the place of exit of the encepolocele is in the occipital region in over 73 per cent., in the frontal region in over 17 per cent., and in

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the base of the skull in less than 10 per cent. He collects eight cases having the tumor arising from the orbit, seven through the ethmoid and in the frontal nasal suture, frontomaxillary or frontolachrymal.

Defects in the anterior parts of the skull allowing a protrusion of part of the brain from the anterior cerebral vesicle may be generally classed under the name proencephalus (Fig. 6). The bony defect may be in the ethmoid and the encephalic tumor may present alongside the nose, in the orbit, in the nasal cavity or in the pharynx. Ahlfeld depicts in his *Atlas* a rather extensive tumor escaping from a defect in

FIG. 9. Hyperencephalus. (Profile of Fig. 8.)
(Museum of Rush Medical College.)

the ethmoid and presenting alongside the nose. (*Atlas,* Tafel XLIII., Figs. 18, 19, 20 and 21.) I find no example of proencephalus in Chicago. Rhinencephalus is sometimes the term used to designate a proencephalus protruding from the nasal region. Sometimes the defect may be in the frontal bones and the tumor will present in the forehead.

Hyperencephalus is that species in which the cranial defect is in the vertex of the skull, usually involving the frontals and parietals. This varies in extent from a small meningeal tumor at the top of the head to a tumor which contains almost the whole brain, and in conse-

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quence of which the bones of the cranial vault are rudimentary (Fig. 7). The latter are called podencephalus by some writers. A very interesting specimen of hyperencephalus is in the Rush Museum.

Case VIII.—(Skeleton.) This specimen was a female fœtus of eight months' gestation, well nourished and well developed, with the exception of the head (Fig. 8). The vault of the cranium appears merely as a low ridge around the top of the head. Upon the base of the skull and covered only by membrane lies the brain, consisting of two lobes with rudiments of the other structures. The cerebral tumor measures 1¼x1½x¾ in.

There is only a slight spina bifida, involving one vertebra, there is

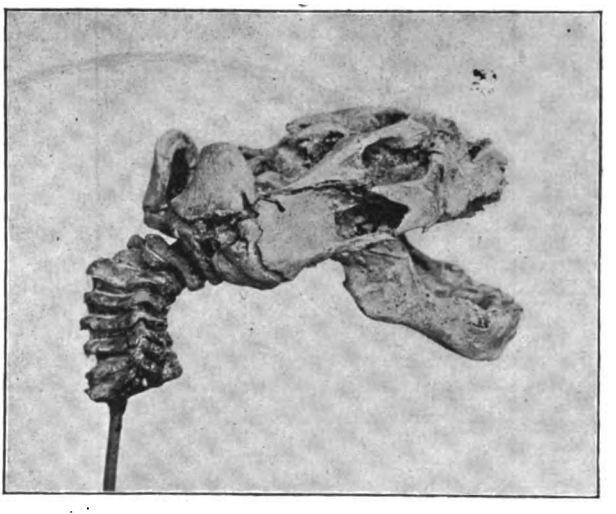

Fig. 10. Hyperencephalus. (Skull of Fig. 8.) (Museum of Rush Medical College.)

no tilting back of the head nor abolition of the neck furrow. The face and neck are well developed, except that the eyes are abnormally close together, are much smaller than usual in the same age, and are closed in tightly by minute eyelids. The squamous plates of the occiput are the only prominent parts of the cranial bones, and these turn forward so much as to greatly foreshorten the uppermost part of the head. This foreshortening is best seen in the profile picture (Fig. 9). Outside of the head and upper spine there were no anomalies.

The skeletal preparation shows the concavity and foreshortening of the base of the skull quite plainly (Fig 10). The frontal bones are

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represented only by the orbital portion and by a slender process which extends backwards to articulate with the temporal. No trace of parietals can be found. The nasal bones are also entirely wanting. The temporals are fairly well developed as to their mastoid portions, but have almost no squamous processes. The external auditory canals are wanting; the tympanic membranes looked downwards on either side. Through the opening which was covered by the tympanic membrane can now be seen the small bones of the middle ear. The occiput has

FIG. 11. Notencephalus.
(Museum of Rush Medical College,)

the basiliar and the two condylar portions separated from each other and a widened foramen magnum. The squamous portion is represented by a triangular piece of bone on either side of an opening which is continuous with the foramen magnum. This opening measures one-half an inch at its narrowest part. These squamous plates articulate with the condylar portion on each side and with the temporals. They are turned forward, thus limiting the capacity of the cranial cavity.

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The atlas is the only vertebra which is open posteriorly. Its laminæ are separated by an interval of one-quarter of an inch. The rest of the skeleton is normal.

In notencephalus the hernial protrusion of the cranial contents is through a defect in the occiput and the tumor hangs behind the head upon the neck like the old-fashioned waterfall of our grandmothers. This tumor may be large or small, containing very little or most of the brain, depending chiefly upon the size of the opening in the bone. If the opening is large and the main part of the cranial contents protrudes, the frontal, parietal, and squamous temporal bones will be more or less rudimentary and will lie close to the base of the skull, leaving hardly any cavity within. The minor degrees of notencephalus are not necessarily incompatible with life, although the danger of injury to the cerebral tissues within the bag at the back of the neck is so great that few live very long even if they survive the traumatisms of labor. If the tumor is only a slight meningocele the child may live for a long time. At least one case is recorded where such a person lived to adult life.

Case IX.—A female fœtus of the ninth month of gestation (Fig. 11), measuring in length 17 inches, breadth across shoulders 5½ inches, bitemporal diameter 3¼ inches. From the back of the head hangs a soft tumor measuring 5½x4½ inches and found to contain brain matter with fluid. The decomposition of the specimen prevented any proper dissection of the brain. The cranial cavity is much diminished in capacity and the cranial bones lie close together and close to the base, but there is a small cavity within, which, with that in the neck, contains a little brain substance. The cranium is covered with hair, which extends part way on the tumor. The atlas and axis are open dorsally, the foramen magnum is enlarged, and there is a communicating defect in the squamous occiput forming with the first a figure 8. This opening is 1 inch at its widest and ⅝ of an inch at its narrowest. Through it protrudes the notencephalic tumor. The spinal part of the figure 8 measures ⅞ inch across. Otherwise the fœtus is normal.

Iniencephalus is that species of exencephalia in which the defect in the skull is in the occiput, accompanied by a cervical spina bifida and by extreme retroflexion of the body so that the brain comes to lie upon the bodies of the cervical vertebræ but is covered by the bones of the cranial vault. The cranium and brain are often of normal size. The margins of the occipital defect articulate with those of the spina bifida more or less completely, thus closing in the brain which, though lying partly outside the cranial box, is yet protected by a bony covering. In one

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variety of iniencephalus there is no external cerebral tumor. This I have called iniencephalus clausus. In another there may be incomplete articulation of the occiput with the laminæ of the cervical vertebræ, so that a tumor containing brain or meningeal fluid may protrude. This I have called iniencephalus apertus. In a monograph on iniencephalus

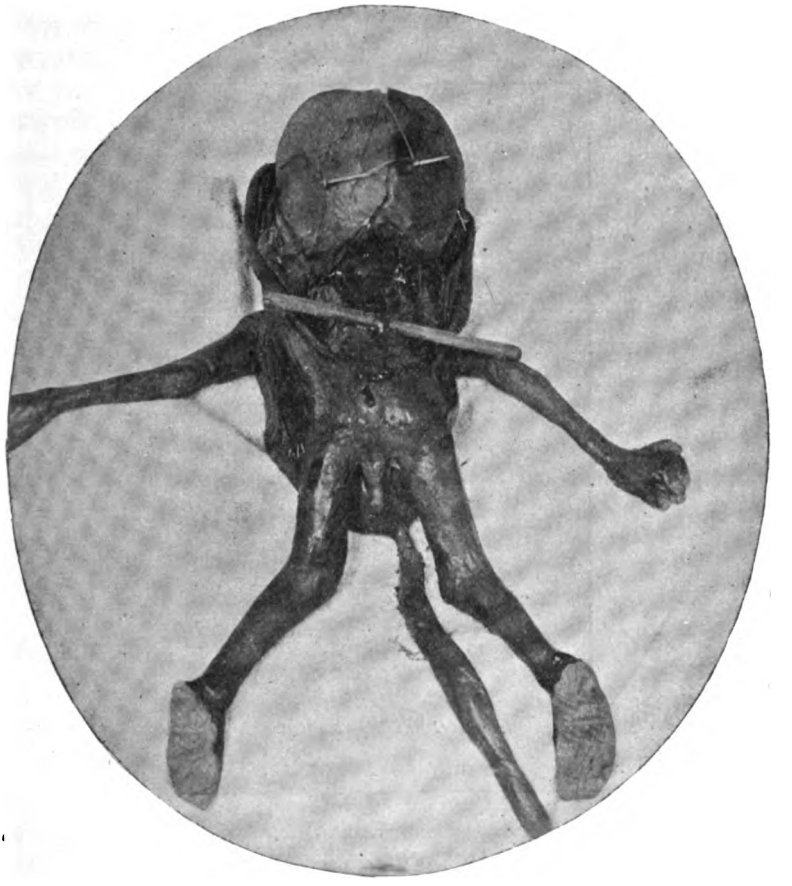

FIG. 12. Iniencephalus.
(Museum of Rush Medical College.)

published a few years ago in the *American Journal of Obstetrics,** I discussed the subject somewhat at length. Iniencephalus is one of the rarest forms of exencephalia. I was able to collect but nineteen cases in the literature, besides three dissected by myself. Since then I have

*January, 1897.

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found two more specimens in the museum of the Chicago Medical College and three or four more have been reported by others.

Case X.—A female fœtus of about the sixth month delivered in my practice, along with a normal uniovular twin (Fig. 12). It will be sufficient to call attention to the marked retroflexion of the body of the fœtus, which is so great that the occiput and anus are brought within less than one inch of each other. The brain is entirely covered

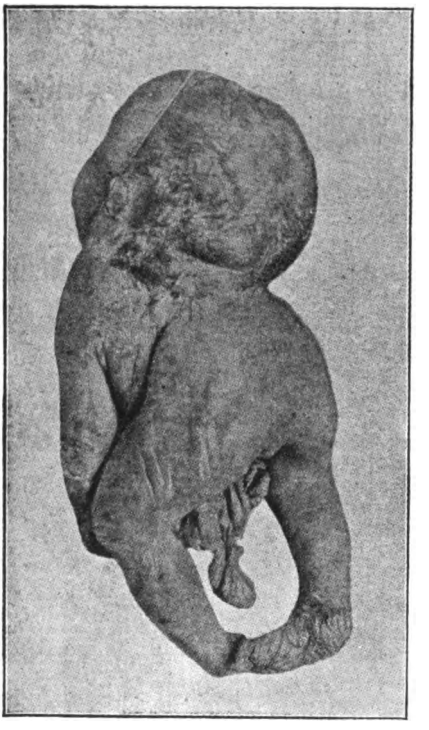

FIG. 13. Iniencephalus Celosomus.

(Museum of Rush Medical College.)

by the cranial bones and lies partly in the cranium and partly upon the bodies of the cervical vertebræ. The foreshortening of the back of the fœtus causes a protrusion of the abdominal wall but not enough to force a defect in it so that any viscera might escape.

Case XI.—(Fig. 13.) A female apparently at full term, showing similar characteristics to the foregoing, with the addition that there is

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a defect in the abdominal wall which allows the protrusion of part of the liver and intestines.

Case XII.—A female of about seven months, measuring 10⅜ inches in length, with a bitemporal diameter of $2^{13}/_{18}$ inches. There is less marked retroflexion than in the two preceding; there is, however, considerable tilting backwards of the head; from the junction of the occiput and vertebræ and slightly towards the right side there protrudes a soft tumor, which was found to contain brain and fluid. There is another tumor in the median line over the dorsal vertebræ which has all the characteristics of a spinal meningocele containing fluid and having fibers of the cord distributed over the inner surfaces of its sac. There is

FIG. 14. Iniencephalus.
(Museum of Chicago Medical College.)

talipes varus of both feet. This case has already been reported, like the two preceding. They are examples of iniencephalus clausus and this of iniencephalus apertus.

Case XIII.—(Fig. 14.) A male fœtus of the eighth month, from the museum of the Chicago Medical College. It is an iniencephalus apertus, having three protruding tumors from the junction of occiput and spinal column. In addition there is extensive defect in the face about the mouth and in the palate.

Exencephalus proper presents the same relation to iniencephalus that anencephalus does to the normal. That is to say, there is fœtal retroflexion, spina bifida of the cervical region, tilting back of the head, the

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brain lies mostly outside the cranial cavity upon the open cervical vertebræ, but there is a lack of or a rudimentary condition of the bones of the cranial vault, so that the cerebral tumor lies exposed. The brain is usually much atrophied. In some cases there is a small cranial cavity covered anteriorly by rudimentary frontals and parietals. The species is rare.

XIV.—(Fig. 15.) A male fœtus of about the eighth month with considerable tilting backwards of the head and neck, so that the face looks forward in the line of the axis of the body. The ears are situated almost on the shoulders and the neck furrow is obliterated. The brain lies exposed upon the base of the skull and the first few vertebræ, covered only by membranes. The only calcarial bones are rudiments along the front and sides of the head, so that there is no cranial cavity. The brain tumor is atrophied and dried, now measuring only 1¾x1¼x½ inches. It is divided into two lobes. The spinal column is open as far as the tip of the coccyx, the vertebræ are flattened out and are covered by a membrane continuous with that covering the brain and base of skull, under which membrane lie the flattened fibers of the spinal cord. There is slight talipes varus of both feet. The skin of the neck and chest is œdematous.

Case XV.—A female fœtus of about the seventh month, measuring 12½ inches in length, bitemporal diameter 2⅜ inches. The limbs and body are normal; the head is tilted back so that the face looks nearly forward in the line of the axis of the body; the head is sunk between the shoulders and the anterior neck furrow is wanting. There is synostosis of all the cranial bones; no brain in the cranium, but all represented in the exencephalic tumor, which lies upon the back of the neck as a small bilobed mass about as large as a horse-chestnut. It escapes from the cranium through a heartshaped opening in the occiput, which is continuous below, with an opening between the laminæ of the first five cervical vertebræ. Besides this anomaly of the posterior part of the brain and skull there is a condition anteriorly known as cyclops. A large eye occupies the center of the face. It has two corneæ joined in the median line, and four eyelids joined at their inner ends, which do not completely close the eye. Above the eye is a boneless proboscis measuring ¾x½ an inch. It contains a depression at the end, which admits a fine probe as far as the forehead, where bone is struck.

It remains now to consider the causes of cranio-rhachischisis. First we must turn our attention to hydrocephalus. This is said to be the commonest of fœtal diseases. The malformation consists of the ac-

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cumulation within the cranial cavity of an excessive amount of fluid. Hydrocephalus is called external when the fluid lies outside the pia and internal when the fluid lies inside the ventricles. The congenital form is almost always the latter. The pressure of the fluid within the cavity of the developing cerebral vesicles causes an atrophy of the cerebral tissue and a stretching of the calvarial bones. These are developed from membrane and for a long time are soft and easily stretched; besides, the intervals between them, which normally become

FIG. 15. Exencephalus Proprius.
(Museum of Rush Medical College.)

the cranial sutures, are capable of great widening from the internal pressure. Thus it comes to pass that the hydrocephalic head becomes enormous in size but contains very little brain. It is foreign to my purpose to consider the obstetrical complications induced by this condition. The cause of hydrocephalus is considered to be a circulatory disturbance of the vascular system of the embryo, perhaps inflammatory, which causes the pouring out of the serum into the cavities of the brain vesicles. With hydrocephalus as with most monstrosities there usually

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occurs hydramnion and often œdema of the integumentary tissues of the fœtus, indicating disturbance of circulation. Now if the effusion of fluid into the ventricles and its consequent pressure upon the surrounding tissues becomes active after the cranial covering becomes strong enough to resist it, hydrocephalus will be the result, while if this pressure force becomes active before the cranial covering can resist anencephalus or pseudencephalus results. In either case the development of the brain is interfered with or prevented. Sometimes vascular pressure will act comparatively late in embryonic life, after the bony covering of the cerebrospinal system is almost complete and the small spina bifida results or else meningocele of the cranium, escaping through a small bony defect, or the skull may be of nearly normal size but the brain completely atrophied from pressure.

Many cases of cranio-rhachischisis can be explained by the action

FIG. 16. Deformities from Amniotic Bands and Adhesions.

of fluid within the cranial cavity. Many of the different forms may depend upon the time of the exertion of the pressure, thus determining whether the malformation shall involve much or little of the cranio-vertebral bony covering and much or little of the brain and cord tissue. Such may explain hydrocephalus, anencephalus and some forms of exencephalus, as well as spina bifida. This explanation will not suffice for all forms. Those malformations accompanied by retroflexion of the fœtal body must have some other causation.

Here enters the factor of amniotic adhesions. In many cases of cranio-rhachischisis there are, besides those in the cranio-vertebral region, other malformations which are admitted to be due to the action of amniotic adhesions or of bands of amnion pressing upon different parts

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of the embryo. Such malformations are club-foot, uterine amputations so-called, hare-lip, cleft palate, and the like. The accompanying picture shows how amniotic bands and adhesions may cause exencephalus and at the same time deformity resulting from interference, with closure of some of the facial clefts (Fig. 16). The appearance of the face of an early human embryo is familiar. Bands of amnion or other foreign bodies lying within the normal facial clefts and preventing closure for a certain period may cause a wide diversity of anomalies, such as hare-

FIG. 17. Agnathus and Ectromelus.
(Museum of Chicago Medical College.)

lip and cleft palate. Pressure from adherent amnion or by bands may cause defects in limbs —so-called uterine amputations (Fig. 17). The picture of a specimen in the Chicago Medical College shows extensive defects in the limbs and absence of the lower jaw. The inner surface of the amnion is composed of epithelial cells resembling those of the endothelial surface of the peritonæum. Circulatory disturbances or even an infectious amniotitis not infrequently exist, especially at early embryonic periods. These disorders may easily cause adhesions

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of the overlying amnion to some part of the epiblastic layer of the embryo lying within. Such adhesions will manifestly be found more often in those regions where the amnion approaches most closely to the embryo. Such a place is the region of the dorsum of the head and the anterior cervical region where the cephalic end of the embryo dips down into the ovum. This portion of the amnion is called the cephalic hood and is formed very early, before that membrane has grown and joined over the dorsum of the embryo. Therefore adhesions would be

FIG. 18. Extensive Fœtal Retroflexion causing Ectopic Viscera.
(Museum of Chicago Medical College.)

most prone to form here if there were any tendency for them to form anywhere. The cells of the cephalic end of the embryo proliferate very rapidly and the loss at an early period of even a few of them would mean the loss of the embryonic representatives (the *anlagen*) of a considerable portion of the cranial, cervical and cerebral regions. The adhesion of the amnion upon a series of these embryonic cells would act somewhat like a piece of sticking plaster. The cells under the ad-

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herent amnion would be held back from proliferating while the neighboring cells would go on in their work of developing the surrounding parts, so that a greater or smaller defect would result. Therefore, an an extensive adhesion over the cranial, cervical and dorsal regions would produce extreme retroflexion of the fœtal body. The rest of the body would grow while the part adherent would remain stationary and at the same time enough cells of the embryo would be destroyed to cause a defect in the covering of the brain and cord or of these structures themselves. If the adhesion of amnion upon the dorsum of the fœtus occur it may fail to cause defect in the cranio-vertebral covering but may result in retroflexion of the whole body on account of fore-

FIG. 19. Iniencephalus with persisting Amniotic Band. (Museum of Chicago Medical College.)

shortening of the back (Fig. 18). Such a case is seen in a specimen from the Chicago Medical College. Here the turning backwards is so great that the abdominal viscera prevent closure of the belly walls and complete ectopia of those organs results. Ectopia viscerum or celosomus may also result from atrophy of the abdominal walls by direct action of the adherent amnion. As the embryo grows the bands of adherent amnion become stretched and atrophied or disappear in later fœtal life. It is not uncommon, however, to find such adhesions and such bands in the fœtus at term or in abortions. The next two cases are illustrations.

Case XVI.—(Fig. 19.) A male fœtus at about full term. This

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is a case of iniencephalus with marked retroflexion. There is no hare-lip nor cleft palate. There is marked retroflexion with obliteration of the neck furrow. From the frontal region two tumors containing brain tissue escape by a round defect in the frontal bones by a single pedicle and extend in front of the forehead over each eye. These tumors are covered with skin. The occiput is rudimentary and the parietals are largely defective, so that a large encephalocele protrudes on each side of the back of the cranium, extending over the dorsum of the fœtus. A fibrous band about eight inches long, which was probably attached to the placenta, runs out from a small membranous patch be-

FIG. 20. Various Abnormities resulting from Amniotic Adhesions in a Case of Hydrocephalus.

(Museum of Rush Medical College.)

tween the two dorsal tumors. This is probably what is left of the amniotic bands and adhesions which caused the deformities present.

Case XVII.—This is a remarkable specimen contributed to the Rush Museum by Dr. Emil Ries, in whose consultation practice the birth of the monster occurred (Fig. 20). There are no less than eighteen anomalies resulting from amniotic bands and adhesions. The skull was enlarged by internal hydrocephalus, so that perforation was necessary. There is a cleft running up from the upper lip towards the the left eye and involving the left nostril. The cleft has healed across

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between the nose and the lip. There is a sheet of amnion running from the placenta to the right thigh, almost amputating it just above the knee and twisting the leg half around. There are amputations of various toes and fingers, and other minor anomalies. The internal organs show little or nothing abnormal. Experiments by Dareste and others have demonstrated beyond doubt that such adhesions of the cephalic hood of the amnion are potent factors in the causation of exencephali anencephal,, and other forms of cranio-rhachischisis with retroflexion of the fœtal body. The great vitality of embryonic tissues explains why we do not oftener find at birth evidences of these amniotic bands and adhesions. Embryonic tissues are strongly capable of regeneration and the lesions in question are very prone to heal with the resulting deformity.

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SPONTANEOUS AMPUTATION OF BOTH FALLOPIAN TUBES.*

By Emil Ries, M.D., Chicago,
Professor of Gynæcology, Post-Graduate Medical School.

In September, 1899, Dr. C. T. Murphy kindly asked me to see a case with him which, on account of its extraordinary pathological finding, is well worth recording. The patient was a married woman, 32 years old, whose menstruation had begun at the age of 13 years and had been regular though at times painful. For years she had some leucorrhœa. Married at the age of 18 years she had one child 11 years ago, which is alive and well, and two miscarriages of seven months each, one twelve, one eight years ago. Ever since the first confinement she has been ailing and her menstruation has become scantier and more painful. Four years ago her present trouble began with severe pain in abdomen and back. For a week before I saw her she was confined to her bed with severe ambdominal pain, temperature as high as 103°, loss of appetite, nausea, inability to move. She was constipated and had some burning pain on urinating. Examining her (September 18th) I found a small, thin, pale, poorly nourished woman with a temperature of 99°, pulse 100, urine free from albumen and sugar. Heart, lungs, liver, spleen without abnormalities. No enlargement of lymphatic glands. The vulva and vagina contained a little whitish discharge. the vagina was large, its walls smooth. A little pus could be squeezed from the left labial gland, nothing from the urethra or right labial gland. Cervix slightly lacerated to the right and left, uterus in anteversion; on the left side the ovary could be felt, on the right side a plainly fluctuating and very painful sac. A diagnosis of inflammation of the right appendages was made and a vaginal operation was recommended.

The operation was performed on September 19th and lasted about thirty minutes. An incision was made around the cervix, the bladder separated from the uterus and peritonæum of the vesico-uterine pouch

*Read. For *Discussion*, see page 68.

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opened. The uterus was brought down into the vagina and it was seen immediately that the tubes formed only very small stumps on either uterine horn. On the right side the rest of the tube presented itself as a bluish-black sac of the size of a goose egg. The operation was then proceeded with so that the ligament was severed after hæmorrhage had been provided against by temporary clamping. In this way the broad ligament of the left side was severed and then the uterus was cut free posteriorly. The uterus was pulled over to the right side. The clamps were removed step by step as a continuous catgut suture starting from the suspensory ligament of the ovary closed the broad ligament. The uterine artery, which was plainly visible, was ligated. Now, the same process of first cutting and clamping and then replacing the clamps by a continuous catgut suture was carried out on the right side. Then the pelvis of the patient presented a row of sutures over the right and left broad ligaments between which the

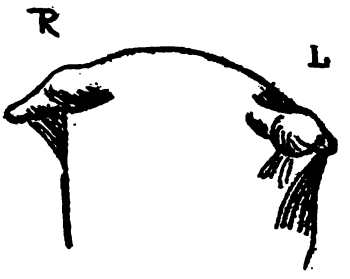

Fig. 1.

dark sac of the right tube was plainly visible. This sac was in no connection with the uterus or the broad ligaments where they had been cut and sutured, but was held in place by a few thin bands of adhesions with the right lateral pelvic wall, which were torn easily and required only one ligature. Now the peritonæum of the bladder was united to that of the cul-de-sac by a continuous catgut suture. Over this the vagina was closed in the same way by a continuous catgut suture. A dressing of sterile gauze was placed in the vagina.

The patient made a smooth recovery, sat up in bed twenty-four hours after the operation, sat up in chair and walked forty-eight hours after the operation,* and left the hospital exactly one week after the operation (September 26th). Examination at this time showed the

* "Some radical changes in the after-treatment of celiotomy cases." *Jour. Am. Med. Ass.*, August, 1899.

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fornix healed smoothly, the catgut suture could still be felt at some points. The general condition was excellent, patient was free from pain. I have seen her again about one month after the operation when she came in a street-car, a distance of about seven miles. Her appearance was splendid, she looked stouter and stronger, was free from all pain, had a good appetite and regular digestion. The vaginal scar was linear and the pelvic condition presented nothing abnormal. I have again examined the patient on December 14th. She has gained 13 pounds and is able to work as a sewing-machine teacher, going to the houses of purchasers and instructing them in the use of the machine. Her condition locally as well as generally is highly satisfactory.

The specimen removed by this operation consists of uterus, stumps of both tubes, ovaries and ovarian ligaments, and the right hematosalpinx. The uterus (Fig. 1) is 6.5 centimeters long, has a good muscular wall, the fundus is well rounded and its top reaches higher up

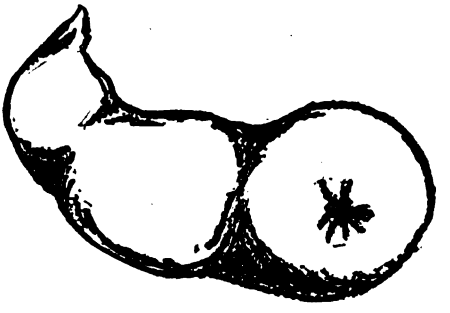

Fig. 2.

than the starting points of the tubes. The stump of the left tube has a diameter at the base of 5 millimeters, its length is above 12 millimeters, below it protrudes only 4 millimeters, its length on top is 17 millimeters, below it protrudes 7 millimeters. The stumps are soft and tapering towards their ends where they terminate in a very small cone without any opening. The peritonæum which covers the stump of the right tube extends from this stump downwards uninterrupted to the ovarian ligament, investing the lateral edge of the uterus between tubal stump and ovarian ligament. On the posterior surface of the uterus extending on to the tubal stump some remnants of adhesions are found. Adhesions are also found on the part of the ovary near the uterus and on the posterior or rather inner aspect of the ovary. The right ovary contains a good-sized corpus lutum. The left tubal

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stump shows a few very fine bands of adhesions anteriorly. The peritonæum covering it again invests the edge of the uterus down to the point of insertion of the ovarian ligament. The ovary of this side is of about the same size as the right one and shows a few prominent cysts. Some bands of adhesions are also low down on the posterior surface of the uterus whereas the anterior surface is free from adhesions.

The detached right tubal sac (Fig. 2) has a length along its upper border of ten centimeters and a largest circumference of about 9 centimeters. It is somewhat pear-shaped, the outline being irregular in consequence of a number of shallow constrictions. The uterine end forms a small cone completely closed and covered with peritonæum. The abdominal end is rounded and shows a shallow dimple as a remnant of the fimbriated opening. The upper part of the uterine end presents a few thin bands of adhesions, as do also the anterior and posterior surfaces. There are three small cysts, probably hydroparasalpinx, on the lower surface of the sac. It is important to note that, aside from the adhesions, the cut surface where the tube was in connection with the neighboring tissues is not more than about 10 millimeters long and, at its widest point, 5 millimeters wide. All the rest of the tubal sac is covered with smooth peritonæum and therefore must have been unattached.

On opening the sac a serous fluid with a bloody tinge escaped and when the tube is cut open along its upper border it is found to present on its inner surface prominent ridges corresponding to the slight constrictions on the outside. The inside of the sac is lined with a blackish mucosa, the surface of which is irregular and somewhat ragged. In the fluid a smooth body is found, of irregular shape, without any pigmentation, slightly transparent and very soft. Microscopic examination of this body shows it to consist of threads of fibrin, red and white blood-corpuscles. Transverse sections of the wall of the sac show hæmorrhagic infiltration of the tubal wall without any signs of inflammatory processes. The muscular wall is thin and the fibers of the wall are separated in many places by masses of red blood-corpuscles. This infiltration with blood becomes even more marked in the mucosa, where the epithelium of the surface is lifted away in some spots from the underlying tissue by the masses of blood and is flattened and thinned; at a few points it cannot be found at all. Deeper down between the well-pronounced folds of the mucosa the epithelium is cylindrical, normal.

We have here a case of amputation of both tubes and formation of

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hematosalpinx in the detached abdominal part of the right tube, whereas the left tube is completely lost beyond the small stump.

There are two points in this case which can easily be determined beyond any doubt. The one is that the amputation is spontaneous, as neither the history nor the examination of the patients present the slightest indication of operative interference with the tubes previous to my operation. The second point is that the amputation and coclusion of the tubes is an acquired one, as shown by the three pregnancies which the patient went through, as at least one side must have been patent when the patient conceived.

Beyond these two points, however, there are considerable difficulties in the interpretation of the pathology of the case.

There is, first of all, the difference between the two sides, one side showing no trace of tube beyond the small stump, while the other side presents a tumor of the detached portion of the tube. What has become of the missing part of the left tube? The first possibility is that I overlooked it in the operation or that it was so high up that in the vaginal operation it could not be found. The objections against this theory are the following: First, the most careful search revealed no trace of the tube either during the operation or on subsequent bimanual palpation, nor is it likely that the tube could not be found during the operation because of its being located too high up, as an incomplete descensus of the tube is not probable without the ovary being affected in the same way, and the left ovary was found in its normal position in the course of the operation.

If, therefore, we have to assume that the left tube was not found because there was none, we have to consider two further possibilities, one being that the tube did not develop at all—which is not likely, as in non-development of the tube the entire tube is absent without a trace of a stump, and also because the ovary of this side was fully developed, the other one assuming that the tube, after having been developed, was separated from the uterus and the broad ligament by some process and became absorbed. Such a process of separation may have taken place during the intra-uterine or the extra-uterine life. An *intra-uterine peritonitis,* for instance, may have given rise to pseudo-membranes which separated the tube from the stump and permitted it to become absorbed just as parts of extremities, etc., may become absorbed after strangulation by amniotic bands, and in the same way as young embryos implanted free into the peritonæal cavity become absorbed, as described by Leopold. Another explanation might again be given in an *incomplete descensus* of the Mullerian duct leading to overstretch-

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ing of the tube and thereby separation with subsequent absorption. But this is not probable, because, as mentioned above, the ovary had gone through the normal descensus. In extra-uterine life the tube of the left side may have become detached in consequence of *peritonitic adhesions.* A few remnants of peritonitic pseudo-membranes are still visible on the tubal stump. Such adhesions have repeatedly been observed to cause amputation of the tube, as, for instance, by Rokitansky and by Klob. In a recent paper by Ruppolt (*Archiv f. Gyn.,* Vol. 47) a case is described in which the uterine end of the tube has become separated from the abdominal part of the tube and where the ovary also has been cut in two. In one part of the ovary of Ruppolt's case a dermoid had developed, which had given the indication for the operation. In his case there were adhesions between the omentum and the point where the tube had become separated. He considers his case due to intra-uterine peritonitis, but it is impossible to disprove its causation by peritonitis in extra-uterine life even though the history of the patient do not contain any definite data in this respect.

It is *à priori* very probable that in my case a localized peritonitis had given rise to the amputation of the right tube at the uterine end. The remnants of such a peritonitis are still to be found in the occlusion of the abdominal end of the right tube and in the pseudo-membranes on the posterior wall of the uterus, of the ovary, etc. (see above). *Formation of tumors in the ovary* and subsequent overstretching of the tube, which partakes in the formation of the pedicle of the ovarian tumor has repeatedly been observed to produce amputation of the tube. I have observed such a case in an operation for dermoid of the right ovary, where the tube formed only a very short stump, ending in an occluded small cone. But in the case under discussion now there was no tumor of the ovary. It is also possible that in the *migration of the tube* along with the pregnant uterus the left tube was carried high up into the abdominal cavity, then became adherent, and subsequently, when the uterus retired again into the pelvic cavity, could not follow and was then so overstretched that it gave way near the uterus and either still is high up somewhere in the peritonæal cavity or has become absorbed.

If we turn to the right side of the specimen we have, as already mentioned, evidence of peritonitis in the occlusion of the abdominal end of the tube and in adhesions which the specimen shows very plainly. This would favor the theory that the amputation of the uterine end of the tube on the right is also due to these peritonitic membranes. But here another point has to be taken into consideration, the presence

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of the *hematosalpinx* on this side. The microscopic examination of the tubal sac shows plainly that we have to deal, not with a hæmorrhagic inflammation, but with a hæmorrhagic infiltration of the wall of a hydrosalpinx. What caused this hæmorrhagic infiltration? In answering this question it will be well to take into account the results of a paper by Praeger (*Arch. f. Gyn.*, Vol. 58). In this paper twenty-two cases of tubal tumors are reported, in which torsion of the pedicle of the tubal tumor had taken place. It is clearly demonstrated in this review of Praeger's that in consequence of such torsion of the pedicle hæmorrhagic infiltration, sometimes proceeding even to hæmorrhagic necrosis, takes place, and also that in consequence of this torsion of the pedicle of the tubal tumor the tube may become so much twisted that an amputation as a consequence is not impossible. In two cases reported by Von Herff and Hirst the tube had become almost completely severed at the point of the twist.

Is it not possible that in our case the right tube became separated in consequence of such torsion of its pedicle? The exceedingly small size of the pedicle of the hematosalpinx, as described above, would certainly favor such torsion of the pedicle. But though such an etiology of the case would stamp it as highly interesting, in fact, as a unique case I have seen myself obliged to abandon this theory. The symptoms of an acute inflammatory condition in the pelvis of the patient, which she had for a short time before I operated, and which usually accompany torsion of the pedicle of a tubal tumor, the condition of the pedicle, the microscopic findings in the tube which show the hematosalpinx to be of recent date, make it necessary to assume that the hæmorrhagic infiltration of the tubal wall is of recent origin, whereas the amputated stumps and the occlusion of the abdominal end are plainly of older date. Though I have no doubt but what the patient's right hydrosalpinx had undergone torsion of the pedicle at the time when she was taken sick, I cannot believe that the amputation of the tube was also produced by this torsion. I rather believe that in consequence of a peritonitis with formation of pseudo-membranes the right tube as well as the left became amputated, the right tube occluded at its abdominal end, a hydrosalpinx formed with a very small pedicle. This pedicle subsequently became twisted, hematosalpinx formed, giving rise to the acute symptoms, which necessitated operative interference.

As to the operative treatment in this case, it might be questioned whether the radical procedures which I followed were justified or if it would not have been better to try conservative methods. Through the

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ingenuity of our president, Dr. T. J. Watkins, we possess an operation which enables us to join the isthmic portion of the tube with the uterus after the connection between the two has been interrupted, be it by operative interference or as in this case by pathological conditions. A salpingo-hystero-anastomosis could have been performed in this case. I might have opened the abdominal end of the tube, permitting the escape of the contents of the tube, might have cut open the uterine end of the hematosalpinx, might have removed the uterine stump of the tube, incising the uterine horn clear down to the cavity, and might then have inserted the tube into the uterus. But as I had to deal with an infected uterus and with a tube which had been inflamed and about the asepsis of which I could not state anything positively at the time of the operation, I preferred radical measures. At any rate, if I had tried to be conservative it would have been necessary to give the right tube a better pedicle than it had, in order to insure its nutrition and to prevent the return of the torsion of the pedicle. Though it is a more pleasant task for the surgeon to return organs damaged by pathological processes to their normal functions rather than to remove them, in this case I did not feel called upon to reconstruct a female sexual apparatus which, by its pathological changes, had become a danger to the woman's health.

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AFTER-TREATMENT OF PERITONÆAL SECTION.*

By Henry T. Byford, M.D., Chicago.

In a paper entitled "An Improvement in the Technique and After-treatment of Peritonæal Section,"† I called attention to a systematic method of inducing peristaltic action as soon as possible after a peritonæal section for the purpose of preventing intestinal paralysis and adhesions.

After employing the method for many months with the sole object of reducing mortality I began to notice that my ordinary cases were doing exceptionally well, so to speak. There were practically no temperature cases, no crying for morphia, no bloating, no fixed pains, and seldom any subsequent pain in the ovarian regions even when firmly adherent appendages had been removed. Formerly the after-treatment was troublesome, and the patient was often many months in recovering from her symptoms, but now the after-treatment became exceedingly monotonous for want of complaint on the part of the patient. Hence I began to use the treatment in simple as well as complicated cases in order to make the patient more comfortable and to render the convalescence more rapid.

The method there advocated consists of four drams of fluid extract of cascara, or some equivalent, two hours before the time set for the operation, dram doses of sulphate of magnesia every hour from the time the patient awakes after the operation, and a high glycerine and water enema (ʒii to ℥iv) every two hours, beginning eight hours after. A high glycerine enema was given before the patient left the table after operations in which adhesions were separated and raw surfaces left. A prompt movement of the bowels and a free passage of flatus not infrequently resulted from this enema before the others were given, and hence I began to give it as a routine practise in order to save, as far as possible, the trouble connected with giving a nauseated patient the salines and later enemas.

As I said in that paper, the treatment must, as a rule, not be discontinued until the patient passes flatus, not only with the enemas but

* Read. For *Discussion*, see page 68.

† *American Journal of Obstetrics*, Vol. XXXVI., No 1, 1898.

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also freely between enemas, *i.e.*, efficient peristaltic action should continue at intervals. I forgot at the time to say that means must be taken to maintain frequent peristalsis, and a daily evacuation of the bowels, after the first days. To this end two drams of sulphate of magnesia or two or three ounces of Hunyadi water are given night and morning for two weeks, the doses being regulated according to the effect. In this way there is but little chance for the occurrence of adhesions at any time.

In the simpler cases of peritonæal section treated in this way the patient can, without harm, get out of bed in ten or twelve days, if the abdominal incision is entirely healed and properly supported.

The treatment may be somewhat modified to suit different cases. Thus if a patient be in need of a stimulant, I usually add an ounce of whiskey to the enema that is administered on the operating table, giving what in the Woman's Hospital we call the one, two, three enema, viz.: one ounce of whiskey, two of glycerine, and three of water. In patients who have lost much blood a large, high beef-tea enema is given instead, and is repeated every four hours. If the beef tea is made strong enough the enemas will usually, within twenty-four hours, start up vigorous peristaltic action.

If the patient cannot take sulphate of magnesia, an ounce of Hunyadi water, or an ounce and a half of the liquid citrate of magnesia, or half an ounce of the granular citrate may be substituted. Instead of the fluid extract of cascara I often give half an ounce of syrup of figs. In some cases oxgall enemas (ʒss of inspissated gall to Oss of water) are used when the glycerine does not act well.

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TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, December 15, 1899.

The *President*, T. J. WATKINS, M.D., in the Chair.

Cranio-Rhachischisis. (Inaugural Thesis.)

BY HENRY F. LEWIS, M.D.

(See page 34.)

Spontaneous Amputation of Both Fallopian Tubes.

BY EMIL RIES, M.D.

(See page 58.)

The After-treatment of Peritonæal Sections.

BY H. T. BYFORD, M.D.

(See page 66.)

DISCUSSION.

Dr. REUBEN PETERSON: I would like to report a case supplementary to Dr. Ries' case, upon which I operated a week ago to-day. Unfortunately, I had not heard the doctor's paper at that time or else I should have been able to present the facts better than I am able to do this evening.

The patient was a young woman, single, twenty-seven years of age, with no particular gynæcological history until two weeks before the operation, when she was taken with pain in the right inguinal region and, although she was not confined to bed, still she had considerable fever and great pain. I found evidences of pyosalpinx, quite a large tumor on the right side, sent her to the hospital and two days later operated. The tumor was quite low in the pelvis and I thought I might be able to get at it through the vagina. But I found that the

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mass extended so high up in the abdomen that it was wiser to make a supplementary abdominal incision. Subsequent events showed the wisdom of this procedure. I found the omentum and two or three coils of the intestine closely adherent to the pyosalpinx, and by means of the abdominal incision I was able to separate the intestines from the tumor much better than I would have been able to do from below. I removed the tube and ovary, and sutured the stump somewhat in the manner described by Dr. Ries. Inasmuch as she was a single woman, I deemed it advisable to be very particular in examining the tube and ovary on the left side. I was wearing gloves, because the patient was a syphilitic, and I was unable to find the appendages on the left side, which I ascribed to the clumsiness of the gloves; so with retractors I exposed the broad ligament and traced the round ligament from the uterus to the inguinal opening, but could find no tube or ovary. The tube was represented by a stump, such as may be seen on the left side of Dr. Ries' speciment. It was about one-third of an inch in length and perhaps the same in diameter, smoothly covered with peritonæum. The broad ligament was extremely thin and did not extend above the tube. I traced this broad ligament as far as the pelvic wall and could find no evidence of the tube or ovary. If I had had the advantage of hearing Dr. Ries' paper before encountering this case, I should have gone even higher in the abdomen to see if possibly there were an undescended tube and ovary. So evidently we have spontaneous amputation of the tube and absence of the ovary in this case. Either the tube and the ovary have been absorbed, or else they were higher up in the abdomen and escaped my notice. Of course, in this case it will not be proof that the ovary is still in the abdominal cavity if the woman menstruates after the operation, because inasmuch as the tube and ovary were adherent on the right side there may have been parts of the ovary left.

In regard to the after-treatment of abdominal and vaginal sections, I desire to say a few words. I am glad that Dr. Ries has brought up this subject, because I think it is of exceeding value. When I was a hospital interne I remember distinctly the after-treatment of simple operations on the cervix and perinæum. If a woman had a cervix, cystocele or perinæal operation, they were not done together but separately, and she had a diet of beef tea and chicken broth for two weeks while she was having the operation on the cervix. Then she had beef tea and chicken broth for another two weeks while she had an operation done on the cystocele, and again she had beef tea and chicken broth during the cystocele operation. That treatment, viewed in the light of

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the present day, was as far to one extreme, as I think perhaps we may say Dr. Ries' is to the other. It was not based on scientific principles. The patient was too much starved and kept in bed too long. In the same way patients on whom abdominal sections had been done were kept on their backs for a week, not allowed to turn, and I well remember at the end of this time lifting these patients so that the draw sheet could be removed preparatory to their turning over on the side. All that has been changed as the years have gone by, and now we are in a better position to judge what is best for our patients. It is not a question of what can be done, but of what is best for the patient. We have had delirious and insane patients get up on the day following operation, have had them go to the closet when the nurse was not looking, yet these patients apparently were not injured. But I do not think that such should be the routine treatment for these patients. I agree with Dr. Byford that it is best to give the parts within the pelvis a chance to heal, not by confining the bowels for seven days but by allowing the patient to remain in the recumbent posture. I do not know that there is much damage done by allowing these patients to get up on their feet on the second or third day after operation, as far as the intestinal adhesions are concerned. From my experience with intestinal adhesions, they are firm a very few hours after operation, and I very much doubt whether Dr. Byford's method of starting peristalsis, if it is done twenty-four hours after the operation, will have much to do with the non-establishment of the adhesions. I think it does good in this respect, that it prevents the bowels from becoming stagnant; that is, it avoids paresis of the bowel and the accumulation of gas, which in itself causes paresis. But so far as the adhesions are concerned, I am doubtful.

In the last five years I have adopted a plan somewhat similar to Dr. Byford's in giving enemas shortly after operation. I give a mixture of salts, glycerine and water about twelve hours after the operation. If the bowels fail to respond to that enema, I let the patient alone for another twelve hours. I do this for reasons which have seemed good to me from carefully watching my cases. At one time it was advocated to give salts immediately after the operation in order to avoid peritonitis, and the effect upon the patients was not pleasant. They vomited in the majority of cases, and I could not see that this method was very efficacious. Now, I almost never give any morphine, codeine or anything else after an abdominal section. In severe cases, by giving these enematas and carefully refraining from giving any medicines, except perhaps strychnine hypodermically, I find my patients get along

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much better than when I resort to more active treatment. For five years I have not given any whiskey to patients after an abdominal section. Prior to that time I gave it in quite large quantities, in one or two ounce doses, and owing to the depressing effect which followed its use, I gave it up.

A vaginal incision is entirely different from an abdominal incision. If I understand Dr. Ries correctly he uses the same methods in the after-treatment of his abdominal cases that he does in the vaginal ones, and allows them to get up on the second day in the same manner. This is wrong. From the standpoint of the abdominal incision, unless we use a method similar to the one advocated by Dr. Harris, whereby the abdominal incision silver wire is used in sewing the different abdominal layers together, I believe that the intra-abdominal pressure may cause damage to the abdominal wound. I am not entirely an ardent advocate of catgut for holding the different layers of the abdominal wall, because I believe it is liable to give. Certainly I would not let a patient get up after so short a time if I employed the interrupted suture. So from the standpoint of the abdominal incision, if I advocated this in a society or otherwise, I would state how the abdominal wall should be sutured. The majority of my cases seem to do better for the rest in bed, not that I could not get them out of bed after operations, say within two or three or five days, but they do better for the rest in bed. The patient, whose case I have described, lost a great deal of sleep for two weeks previous to the operation. She asked me two days ago if she could not get up, but she is rather anæmic and I believe she will be better off to remain in bed another week. At the end of this time I shall allow her to get up for a little while each day and let her leave the hospital at the end of three weeks.

There is another class of cases, mentioned at the last meeting, those of poor dispensary patients, who have not had a good rest in bed for perhaps years. Such patients are far better for having such a rest. On the whole, therefore, I should not, as a rule, advocate the early getting up of patients after abdominal or vaginal operations.

Dr. M. L. Harris: The specimen presented by Dr. Ries of spontaneous double amputation of the Fallopian tubes is an interesting one, and I am of the opinion it was unmistakably due to pathologic processes during adult age. The Mullerian ducts are developed from evaginations of the cœlum epithelium and project cephalo-caudal, the uterus developing from the caudal end. If the tube is interrupted in its development at any time it invariably shows in the uterus. If one tube is imperfectly developed, we always have a unilateral uterus. In this

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case we have a perfect bilateral uterus; both tubes must inevitably have been perfectly developed at one time. Even if an arrest of development take place, or rather an arrest of growth after the tube has reached its caudal end, we would then have a unilateral uterus developed, rudimentary on one side, with perfect development on the other, consequently there is no question but that these tubes were pathologically amputated. It is too bad that the doctor did not perform here an abdominal cœliotomy, as a more extensive examination could have been made for any remaining tube higher up.

The division of cœliotomies into abdominal and vaginal, in reference to the time at which these patients should get up after operation, is in my opinion without any importance. Unquestionably, the incision in the abdominal wall at one time played a considerable rôle. However, since I have been using the longitudinal wire suture I find it makes no difference. The abdominal incision has lost all the terrors which it seemed to have had before, and I think a patient can get up just as quickly after an incision in the anterior abdominal wall, if sutured with longitudinal wire sutures, as after vaginal cœliotomy. I let patients get up just as soon as they feel like it; I do not set any particular day for them to get up. Some feel like getting up the first two or three days after operations and others at the end of a week. I have had patients up and about the wards at the end of a week; I have had others up and walking around with wire sutures in the abdomen at the end of the second week, and have recently sent three patients home from a hundred and fifty to five hundred miles at the end of the second week after laparotomies in which I had used the longitudinal wire suture. This suture gives such accurate approximation and is so firm that patients feel none of the weakness which we used to hear them complain of, when they felt as if the abdomen was going to drop apart. These sutures can remain any length of time, but they are permitted to stay at least two weeks. With the wire suture, all the objections which we hear against the anterior abdominal incision have lost their force. The scar is insignificant. There are no lateral openings to leave scars. We never have any stitch abscesses. The scar is perfectly smooth, union is absolutely perfect and the patient can get up as soon as she feels like it.

Dr. Albert Goldspohn: I was very much interested in the case which Dr. Ries so ably presented, and I would agree with his deductions in regard to it.

With regard to intestinal peristalsis soon after abdominal section, I agree with Dr. Byford's view, if not with his means. I think it is more important by far to establish intestinal peristalsis within twenty-

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four hours after an abdominal section than to establsh inside of a week general muscular action of the body which is healthy. There is usually little or nothing the matter with the extremities and trunk exclusive of the abdomen and pelvis. They are not in any great danger of suffering from atrophy from inactivity while resting in bed two weeks. But a great deal of harm may result from the absence of intestinal action very soon after an intra-abdominal operation. I would like to ask Dr. Byford, with regard to cascara, whether its effects are uniform and whether he has had any unfortunate results from its use; and in that connection I would mention one instance that may perhaps not be chargeable to cascara but at the same time made me a little careful. A patient, who had been a confirmed invalid, confined to bed, in whom constipation was a leading symptom, required a vaginal hysterectomy; inasmuch as intestinal torpidity was a leading feature, I followed Dr. Byford's suggestion, gave the patient two drams of fl. ext. cascara two hours before operation; everything transpired very kindly, there being no difficulty about the operation and no untoward symptoms afterward, except that the woman had unusual abdominal pains and evacuations. But after a week, and continuing later, she passed masses of membrane from the bowel as if she had dysentery. There were regular exfoliations of mucous membrane, and she continued to have intestinal difficulty from that time until she passed out of my hands, when I turned her over to a medical gentleman. She had intestinal trouble; stricture with ulceration was my view.

In regard to this subject of early getting up after abdominal and vaginal operations, it is perhaps opportune that we be exhorted by some one not to persist too far in keeping our patients in bed in a routine manner. It is unnecessary that they all lie in bed two or three weeks after operations. Exceptionally they can get up a good deal earlier than that. But what are the principal features to be considered as a guide in determining this question? It has been stated by good authority that experience shows we have proportionately more deaths from pulmonary embolism and cerebral embolism after vaginal hysterectomy than after abdominal operations, the thrombi being loosened in the veins of the pelvis and floating to unfortunate places. Apparently owing to the greater liberty of movements in bed allowed patients after vaginal section, because they are less sick than the ventral cases. In this connection I wish to relate a sad experience. An elderly lady, a sound healthy individual without any heart disease, was subjected to a vaginal hysterectomy by me. The next morning, in less than twenty

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hours after the operation, when the night and day nurses were changing, she stole a march and got up to get a glass of water because she felt well enough to do so. She came back to bed with the assistance of a nurse but was dead inside of ten minutes. Autopsy showed embolism in the brain.

In a general way we ought to cling to the principle that an injured member should be put at rest. We are talking now about abdominal and vaginal sections for pelvic lesions, and we certainly do not put the pelvis at rest with the patient in the erect posture. In our clinical experience we have noticed that many of our gynæcological patients complain a great deal of pain when they are up and about. They will tell us that if the pain is bad, shortly after they lie down, the pain is better. They will tell us that they have pain in the daytime, but not at night when lying down. I have had to do with cases of young girls at or about puberty, with obstinate neuralgias, dyspepsia and consequent anæmia, owing to large cystic ovaries. If they had been older I would have advised doing some operation, yet in those children it would seem almost heartrending to propose surgery. Furthermore, local treatment of any kind in such cases is equally out of place. I recall several such cases, one in particular. Medicine, including iron in its most approved form and manner, had been given internally by some of the best physicians in the city, and in some of the cases one or two gynæcologists had preceded me. It was hard to tell what to do with such cases. The diagnosis was made by recto-abdominal palpation without narcosis in some, in others by an additional vagino-abdominal palpation during narcosis. I decided to try to deplete their pelves by postural treatment and rest. They were ordered to bed and kept there for a month, in two cases for two months, with the foot of the bed elevated a foot and a half at least, allowing them only a little roll for a pillow to lay the head on. This seemed at first awkward to them, but very satisfactory results were obtained at the end of a week. There was soon a diminution of dyspepsia and of pain, with a marked improvement in sleep, appetite and nutrition soon following. We need to recognize this principle in our post-operative treatment if the highest degree of permanent good is to be attained by our operations.

So far as the danger of the abdominal incision is concerned, I think I would risk having my patients get up in two or three days and that nothing would happen to the abdominal incision, the way I sew it up. But I want them to remain in bed in order to get good results at the site of operation proper, because if they get up very early the

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induration in parts containing stitches and about stumps, possibly also exudates that would occur in a minimum degree when the patients lie down, will take place in a maximum degree if the parts are not allowed the privilege of rest, and there will be a proportionate sacrifice of the degree of recovery from former ailments.

Dr. FRANK A. STAHL: When Dr. Ries advanced the argument some time ago of permitting patients to get up and be about from the second to the seventh day after abdominal and vaginal operations, and had reiterated those sentiments here to-night, I wondered whether there has been a new era established in surgical pathology. I believe it was Billroth, the great pathologist, who said that where we desire restoration or regeneration in an injured part it should be given physiological rest. Pathologists throughout the world have seconded that doctrine. The conclusion of the essayist strikes me as unwarrantable and premature. Because post-operatively the psychically abnormal, delirious or insane patient does exceptionally get up, go to the toilet-room and return without injury (but not in all cases), therefore the normal patient can do likewise, seems to be a conclusion quite extravagant. Even so extreme would be the conclusion that because the somnambulist may tread with safety the serrated edge of the roof during his hypnotic wanderings (but not without more or less physical or mental exhaustion), therefore the ordinary individual, normally, ought to do likewise. It has been advocated to-night to allow patients to get up two or three or five days after operations with stitches in the abdomen. The question arises whether adhesion of the parts takes place to such an extent as to warrant patients in getting up without danger in so short a time after operations. I do not think so. Here is another thought: One of the speakers claimed that there need not be any fear from the stitches which are left in these operations, and that patients may get up in a day or two without the wound breaking apart. That may be true in some cases where the physiological resistance is normal. But let us take those cases upon which we operate in whom the physiological resistance is not normal; there the presence of the stitches has a tendency to produce irritation, which will militate against a future perfect restoration of the part and its physiological function. I have been surprised in listening to some of the remarks made this evening. I know of two fatal cases that occurred from patients getting up too early after operation. One patient was operated upon in one of our hospitals for some pathological condition whose nature I do not know. She was a young woman. The day after returning home, her little child, in trying to

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climb upon the bed, was about to fall, when she sprang up to catch it from falling; in doing so something must have given way intra-abdominally, for when I arrived she was breathing her last. The other case was that of a multipara after a normal labor. On the fifth day, noticing her two little girls trying to lift quite a heavy basket, for fear they might injure themselves, she arose and assisted in lifting the basket; a few hours afterward she died. I recall another case of recent date, upon whom a herniotomy was done, shortly after which the patient was sent home; there was apparently perfect union. She was able to get around, but complained of some pain not serious. This woman was treated with an abdominal supporter. If there is any virtue in allowing patients to get up early after operations or in testing the cicatrix, which is permitted to be exposed to intra-abdominal pressure without support, this certainly was a case for such test. In this case for some reason the abdominal supporter was applied about the abdomen but did not cover the cicatrix from the herniotomy. Under this increased intra-abdominal pressure it is not surprising that she soon complained of pain and bulging of the cicatrix. This woman is now wearing a truss, and sooner or later she will have to undergo a second operation. It seems to me that surgical pathology argues against allowing patients to get up at the end of two or three or five days. I recall a case in which I performed three cœliotomies upon the same patient, two for extra-uterine pregnancy and one for an ovarian cyst. This woman has never enjoyed better health since she has been married than after these three operations done in the short space of a little over one and three-fourth years—twenty-one months. After the first operation she remained in the hospital seven weeks; after the second, five weeks; and after the third, three weeks. The after-treatment was governed largely by the conditions and symptomatology of the case, nor has she even a slight bulging of the cicatrix.

There is one other point I wish to refer to, so far as the after-treatment is concerned, and it is this: We all know that secondary hæmorrhage, peritonitis and sepsis are the three great factors we wish to avoid. Secondary hæmorrhage is especially favored by too early physical exertions, such as the patient brings about by being in the upright position, for when in this position it is easy to have rupture of the parts. In like manner is peritonitis favored. So far as sepsis is concerned, you may rub a roughened surface that has not yet been perfectly restored, and the consequence follows that you encourage a lowered resistance of the part; an inflammatory exudation with a determination of septic material to the part and absorption. This is not

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rare in post-operative cases. In regard to vomiting and its control, an excellent thing to use is a solution of tartaric acid, half a teaspoonful in a glass of water; let the patient sip it in teaspoonful doses; my acquaintance with its pleasant refrigerant and gastro-intestinal corrective qualities in typhoid fever led to its use for, and in anticipation of, post-operative gastric disturbances.

Dr. HENRY P. NEWMAN: I take it that we are yet to hear from Dr. Ries as to the *object* of letting patients up two or three days after operations. I was anxious to know the reason why and just what benefits accrue and to what cases it is applicable. We do not, all of us, remove the appendages, uterus and tubes for simple inflammatory trouble; occasionally we leave something behind to be taken care of. If the line of treatment advocated by Dr. Ries is efficient, we want to know about it. So far as my experience goes, a great deal of benefit is derived from the recumbent posture, as has been said by Dr. Goldspohn and others. By rest of the parts we sometimes accomplish fully as much as we do by the knife. It is not wholly a question of an abdominal or vaginal wound; it is the condition of affairs in the pelvis, and cases should be carefully selected, to say the least, that should be allowed to get up at the end of two or three days.

I agree with Dr. Byford in regard to forestalling our cases against gaseous distress, adhesions and paresis of the bowels by giving early enemata and obtaining action of the bowels promptly. As the hour is late, I do not wish to consume further time.

Dr. A. H. FERGUSON: I would like to say a word or two on this interesting subject. The paper of Dr. Ries was extremely interesting and he has gone over the subject in a very able manner. We are indebted to him for giving us his ideas on this subject. It reminds me of a case I operated on at Columbus, Nebraska, last fall. I was asked to do a vaginal cœliotomy for tubal trouble. This I did, and found only one tube and ovary. I searched for about fifteen minutes for the other tube and ovary but could not find them. A report came six months later that an abdominal section was made, and the left tube and ovary were found high up—a pyosalpinx left behind. This illustrated a point that was brought out by Dr. Harris in connection with the case of Dr. Ries. I remember operating some fifteen years ago on a case of complete rupture of the perinæum. The case occurred in my own practice; I used forceps and there was complete rupture. I did an immediate operation and obtained union by first intention. I removed the stitches on the morning of the ninth day, allowed the woman to get up, and about five o'clock in the evening she died of embolism. We

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may have embolism early, or late when absorption begins to take place, which is about the ninth or tenth day. By having the patient remain in bed longer, this trouble might probably have been obviated.

A year ago I reported a case to the Chicago Medical Society of a little boy upon whom I did a gastro-enterostomy, using silkworm gut stitches to close the abdominal wall. These were removed on the ninth day. The same night the small intestines protruded from the wound, showing that some patients, even if allowed to get up, must have the stitches remain in place, as has been mentioned by Dr. Harris.

I remember opening the abdomen a second time for some complication. In one case it was volvulus, about the seventh or eighth day after operation, and, upon removing the through-and-through stitches, instead of using the knife to open the abdomen I used my finger; the repair was only granular. So the idea of allowing patients to get up too early after operations is to be deprecated, and in my own practice I am guided very largely by knowledge of the history of repair. In my vaginal or abdominal operations I keep my patients in bed for two weeks, allowing them to sit up in bed during the third week, and then letting them out of bed. I give four or five grains of calomel four or five hours before the operation, and immediately after the operation small doses of salines, after the vomiting from the anæsthetic has ceased. With this practice, carrying it out faithfully, I get as good results as I should by allowing patients to get up so early, and it lessens the danger to life.

Dr. Ries (closing the discussion): This discussion has been very instructive to me, and I am surprised that the attacks have not been more furious. A few words as to the case which I reported. Dr. Peterson misunderstood me when he said that when there is a stump of the tube the amputation must have been during intra-uterine life. That is not what I meant. I said that the tube must have developed but must have become separated after its development, during intra-uterine or extra-uterine life, because during either period peritonitis is possible. The tube must have been formed and then cut by the adhesions. If no tube forms, then there is no stump. Then Dr. Harris said when the tube does not form that there must be a defect in the uterus. But that is not entirely correct, because a part of the tube only may be formed and part of the uterus may also be present. If the Mullerian ducts formed by the growing down of the cœloma epithelium should suddenly end lower down, invagination of the epithelium may again take place lower down, giving rise to the uterus. Ir-

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regularities of the epithelium may take place but this is a matter of minor significance.

As to the after-treatment of abdominal and vaginal operations, I would not, for a moment, think of addressing in a dogmatic tone the members of the Chicago Gynæcological Society, who have had more extensive experience and greater opportunities for observation than myself. I did not intend to do that and I could not do it. The occasion which brought out this discussion was the report of one of my cases of vaginal operation. But as the question of after-treatment has been raised permit me to say the following: The after-treatment, which I outlined in that case, I follow in abdominal sections just as well, and it makes no difference to me whether there are adhesions to the intestines, to the uterus or to any other organ. It makes no difference whether I leave any raw surfaces; it makes no difference whether I suture the bowel, do a gastro-enterostomy, a nephropexy, an extirpation of the kidney, an operation on the ureter, suture of the omentum to the abdominal wall, extirpate the gall-bladder or do a gall-bladder operation and an ovariotomy on the same patient on the same morning; all that has nothing to do with allowing the patient to get up, as long as the abdomen is closed completely and securely at the end of the operation.

As to the consequences of allowing patients to get up so early after abdominal and vaginal operation, if I were addressing students, who sometimes ask me questions about the after-treatment of my cases and who sometimes shake their heads considerably, I might say to them, you do not know anything about it. Try it first, then talk about it. I cannot say that here, because, in the first place, some of you do know about it from your own experience. In the second place, some of you have observed my cases. I have not developed this method of after-treatment over night, nor at the writing-desk, but from clinical experience during the last four years, step by step. One or two of the speakers remarked that I have gone to extremes. They are perfectly right. I want to go to the extreme of the permissible. Why? Because we all do this more or less in our work. We do not put in any more stitches in sewing a wound than we think are necessary; we do not dress wounds more frequently than we have to, and so some keep one patient in bed eight days after an operation, another twelve days, another three weeks, and still another six weeks, because they think it is essential for the welfare of them. When I went below the usual length of time in bed, I proceeded slowly, with considerable hesitation and misgivings.

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As to the dangers of hernia, the breaking open of the incision, and embolism, the possibilities of these dangers were not unknown to me, because I had observed such mishaps in cases in which I had followed the usual after-treatment of keeping patients in bed two or three weeks. Since I have not kept them in bed any more than is absolutely necessary, I have not had a case of embolism nor a case where the abdominal sutures gave way, nor a hernia where there has been primary union. And I do not give my patients abdominal supporters for use after these operations, as mentioned by Dr. Stahl.

As to the occurrence of embolism, it will be observed that it may take place anywhere from hours to six weeks or more after operation, the patient having been confined to bed for this period of time. I do not think we can prevent the occurrence of embolism by having the patients remain in bed. In some cases we may guard against breaking open of the abdominal incision by keeping them in bed. While I was connected with the hospital at Strasburg, where through-and-through sutures were used in abdominal work, I saw a case in which the abdominal incision broke open more than a week after the operation and permitted the escape of some bowel. The wound had to be re-sutured, but it did not do the patient any harm. In none of my cases has the abdominal suture given way. I have not used the longitudinal suture of Dr. Harris so far. I suture in layers, and I form as many layers in my suture as I cut through during the operation. In my vaginal operations I have never had the sutures give way. But I know of vaginal operations in which the sutures gave way three weeks after operation, although the patients were kept in bed during that length of time. Why do these sutures give way? Not because the patient is not in bed but because primary union has not taken place, and for the same reason hernia occurs.

Dr. STAHL: I would like to ask Dr. Ries whether he believes primary union is stimulated by the upright position.

Dr. RIES (resuming): In the discussion it has been stated that when a patient assumes the upright position there is greater congestion of the pelvis and more or less danger of the formation of exudates. I understand that sepsis is caused by infection and that infection is carried by microbes; and it makes no difference whether an animal has four legs or two nor whether it assumes the vertical or horizontal position. If you infect a rabbit with the abdomen in a horizontal position, it gets peritonitis. If you infect a human being with the abdomen in the horizontal or vertical position, he or she gets peritonitis just the same. If you injure a man in the abdomen with

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a pistol, he is just as likely to get peritonitis in the horizontal as in the upright position. If you put him on an operating-table and infect him, he gets peritonitis just the same. The position, then, has absolutely nothing to do with it.

As to the formation of adhesions after operation, the point I wished to make was that in many of my gynæcological cases I operated through the vagina to keep away from the bowel. If I operate on cases with intestinal adhesions through the abdomen, if I break up those adhesions, I make raw surfaces before I get to the seat of the disease which I wish to remove. If I operate through the vagina, I remove the offending organ and leave most of the adhesions alone. If I operate through the abdomen and have to break up adhesions, I leave a raw surface or surfaces, and in most cases it is not possible to cover these raw surfaces with peritonæum. Therefore, what becomes of the raw surfaces? They become adherent to anything and everything that comes in contact with them. These adhesions form rapidly. If you keep the bowel quiet by the administration of opium, etc., you are liable to get firm adhesions and intestinal kinks. On the other hand, if you do not keep the bowel quiet, you cause the intestines to pull on these adhesions by peristaltic action and the more friable of them give way. If you should have a case in which exudates are formed, it is not because the woman gets up early, but because there is infection. Absorption of the exudates or hæmatoma takes place the more rapidly the more active the lymphatic and blood circulation in that part is. After operations in the pelvis, be they intraperitonæal or extraperitonæal, the pelvic organs will continue to move more or less; the more they move the more rapidly the exudate disappears, if there is no infection.

I think Dr. Newman struck the keynote when he raised the question as to the advantage of this method of after-treatment. Why do we want to change or depart from the time-honored custom of allowing patients to remain in bed a long time? It sounds strange, it looks outlandish, you say. Why should we? Is there any advantage to be derived from it? Yes. The greatest advantage is that the patient need not stay in bed any longer than is absolutely necessary. If any of you will ask your patients, who have been in bed two or three weeks after operations, whether they would like to get up or not, they will invariably answer, "yes." They have better things to do than to stay in bed.

In dealing with the reduction of time in the after-treatment, we have to consider the historical development of laparotomy, and in the question of regulation of the bowels we are dealing with the remnant of

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a mistake between cause and effect. In the beginning of our experience with laparotomies, sepsis occurred in many cases because surgeons did not know so much about antisepsis and asepsis as they do now. Those cases in which the bowels moved early recovered more easily; therefore, the shrewd surgeon concluded that because the bowels moved early recovery took place more speedily. But he made a mistake in his calculation. Patients did not recover and get on their feet because the bowels moved early but because they were not infected. If you have an infected peritonæal cavity, you do not get the bowels to move; if you have an uninfected peritonæum, you can move the bowels any time you wish to do so. You can move them once or fifteen times. This is merely a question of comfort of the patient and of the nurse.

In my experience the question has resolved itself into doing as little as possible and as much as necessary. People who are accustomed to have daily bowel movements do not feel comfortable unless they have them. Persons accustomed to daily movements of the bowels expect the bowels to move as freely after, as they did before, operation. I do not think the day following a laparotomy is a specially favorable time for having a diarrhœa. God knows, our patients have to stand enough, and I do not see the need of inducing an artificial diarrhœa either before or after an operation.

Another thing in the after-treatment: I have not given strychnia for a long time, regarding it as unnecessary, and in the doses in which it is usually given it has no more effect than sterile water. As to alcoholics: If my patient is a German, a Swede or an Italian, accustomed to wine, etc., and desires to have a little wine after an operation, I do not hesitate to let her have it the same as before the operation.

In order to show the variety of cases amenable to such after-treatment permit me to mention briefly a few cases:

Case I.—Woman about 34. Lactation atrophy of uterus, gonorrhœic endometritis, salpingitis, ovarian abscess adherent to sigmoid flexure. Perforation of uterus during curettage, ventral cœliotomy, left salpingo-oophorectomy, ovarian abscess intimately adherent to bowels, especially sigmoid flexure, the scrosa of which is injured in removal of ovarian sac. Suture of sigmoid flexure and of perforated uterus. Up in bed twenty-four hours after operation, up in chair forty-eight hours after operation, walking on third day, home in less than two weeks. Seen again a few days ago in perfect health.

Case II.—Man 26 years. Pyloric carcinoma, metastasis in liver. Extreme emaciation. Gastro-enterostomy with button. Up in bed

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twenty-four hours after operation, walking on third day. Seen every week since. Scar perfect, gained over thirty pounds in four months, works nine hours daily.

Case III.—Woman about 46. Cirrhosis of liver. Talma's operation Up in bed twenty-four hours after operation, walking forty-eight hours after operation. Leaves hospital seven days after her laparotomy. Has gained thirty-seven pounds in four months.

Case IV.—Woman about 60. Stenosis of cystic duct. Extirpation of gall-bladder. Left hospital less than two weeks after operation.

Case V.—Woman about 45. Cancer of uterus. My extensive operation was done, with removal of lymphatic glands along common, external and internal iliac arteries. Left the hospital twelve days after operation, going home on street-car, over forty blocks.

Allowing such patients as I have described to get up early affords them great relief; it saves time and expense and, as they regain their natural strength much more rapidly with this after-treatment, I recommend it.

Dr. Byford: With regard to determining the time when a patient may get up after an operation, I think we all recognize the fact that a healing wound should be kept quiet, whether it be intra-peritonæal or extra-peritonæal. However, Nature often does pretty well even when the parts are not kept quiet, as is proven by the fact that so many dogs get well after abdominal operations. When we dress a wounded wrist we bandage it and put it in a sling to keep it at rest, and avoid the discomfort, and to a certain extent the harm, of having it hang down and having it used.

After an abdominal section for pelvic disease the wounded parts should be kept quiet and the blood pressure be kept reduced by rest in bed until the reaction from the operation has subsided and the process of repair is well under way. In operations of small extent with ideal results this may not be more than a few days; in other operations, which cannot be termed ideal, the patient may be benefited by several weeks' rest in bed. If the rest in bed is injuring a person then there is a reason for getting her up quickly, but if not I should say that she ought to remain in bed at least one week more—often longer. I think that Dr. Ries has done the profession a service in demonstrating that it is no longer necessary, in the majority of cases, to keep the patient in bed for such long periods as were considered, and probably were, necessary in the days of septic surgery.

Official Transactions.

C. S. Bacon, *Editor of Society.*

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INTRAPERITONÆAL HÆMORRHAGE CONSIDERED IN RELATION TO ECTOPIC GESTATION.*

By J. Clarence Webster, M.D.,
Professor of Obstetrics and Gynæcology in Rush Medical College; Obstetrician and Gynæcologist Presbyterian Hospital, Chicago.

It is of the utmost importance to bear in mind that hæmatocele is not a special disease to be classed with new growths, displacements, and the other distinct affections which are included in the category of gynæcological affections. For a long period the subject was discussed solely from the standpoint of the swelling produced by the outpouring of blood in the peritonæal cavity, and during this era little attention was directed to the causes which might lead to the hæmorrhage. Consequently, little advance was made in the direction of establishing a rational method of treating the condition. Cases were treated by the physician, mainly by rest and by the application of cold to the abdomen. If the patient did not die at once from the effects of the escape of blood, she was bound to endure a long and tedious period of recovery, always being in danger of running risk from one or more important complications; *e.g.*, peritonitis, suppuration, etc. The really first important step that led to the importance of determining the etiology of intraperitoneal hæmorrhage was the recognition of the frequency with which ectopic pregnancy was associated with this condition.

Virgués was probably the first to draw attention to this relationship, while Gallard did good service in urging its importance. Yet, it is to Lawson Tait that the chief credit must be given for the marked changes in the views held by the profession during recent years, as well as for the revolution which has been affected in the treatment of hæmatocele.

There can be no doubt that the most frequent cause of intraperitonæal hæmorrhage in woman is the escape of blood from a pregnant tube. There is, however, some difference of opinion as to the percentage of cases in which this is the causal factor. Lawson Tait states that it is the cause in the great majority of cases. The following statistics are not quite in harmony with this view:

In 66 cases of hæmatocele observerd by Veit 16 only were due to ruptured ectopic gestation; in 20 cases of hæmatocele, observed by

* Read. For *Discussion*, see page 99.

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Jousset, 9 only were due to ruptured ectopic gestation; in 17 cases of hæmatocele, observed by Doubousquet, 5 only were due to ruptured ectopic gestation; in 36 cases of hæmatocele, observed by Voison, 9 only were due to ruptured ectopic gestation; in 7 cases of hæmatocele, observed by Engelhardt, 1 case only was due to ruptured ectopic gestation. Thus, in 146 cases it appears that only 40; or 28 per cent., were due to ruptured ectopic pregnancy.

These statistics are, however, not at all conclusive. They do not exactly represent the conditions in the cases to which they refer, the percentage of ectopic gestations being undoubtedly too small. The clinical determination of tubal pregnancy by physical examination is generally difficult at all periods of gestation; in the early weeks an exact diagnosis, when hæmorrhage has taken place, is often impossible. Consequently, in the above list, there were probably a considerable number of cases in which the pregnancy was neither recognized nor suspected. Exact statistics can only be ascertained by surgical or post-mortem examination.

It is very interesting to compare the above list with statistics recently published by Cullingworth,* based upon an experience gained by abdominal section. This authority reports an interesting series of twenty cases, in which he performed abdominal section for hæmatocele.

In every instance the escape of blood was associated with tubal pregnancy. Until more numerous statistics are obtained in this careful manner, it will be impossible to speak with accuracy regarding the part played by ectopic gestation in the formation of hæmatocele.

As regards the most favorable period for rupture, statistics show that it exists during the second, third, and fourth month of gestation. During the first month it is, indeed, rare.

Henning reports 95 cases, as follows:

Rupture	occurred	in the 1st	month	in 5	cases.
"	"	2d	"	22	"
"	"	3d	"	18	"
"	"	4th	"	23	"
"	"	5th	"	8	"
"	"	6th	"	1	"
"	"	7th	"	1	"
"	"	8th	"	6	"
"	"	9th	"	1	"
"	"	10th	"	9	"
	Beyond the	10th	"	1	"

* *Lancet*, 1897.

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In Von Schrenk's 141 collected cases, rupture took place

In the 1st month	in	13	cases.
2d	"	67	"
3d	"	28	"
4th	"	12	"

In Schauta's 87 cases

In the 1st month	in	15	cases.
2d	"	29	"
3d	"	23	"
4th	"	10	

In Mackenrodt's 38 cases

In the 1st month	in	6	cases
2d	"	23	"
3d	"	5	"
4th	"	4	"

It is important to consider the conditions which exist in this abnormal state and which favor the occurrence of hemorrhage, as well as those which cause variations in the extent and severity of the blood loss. From examinations* of gestation-sacs at different stages of pregnancy it is evident that the muscular part of the wall does not respond to the demands of the developing ovum, as is the case when pregnancy it is evident that the muscular part of the wall does not respond to the demands of the developing ovum, as is the case when pregnancy occurs within the normal fruit-holder, the uterus. In the latter organ a progressive hyperplasia of the musculature takes place, along with a marked degree of hypertrophy.

In the pregnant Fallopian tube similar changes occur, but they are chiefly marked during the first two or three months. After this period they may be found, though not in any marked degree, considerable variations being found in different instances. After the early weeks of gestation, the muscle bundles tend to become broken up, the component parts being gradually displaced in various directions. In the late months of pregnancy one may examine considerable portions of the wall of the gestation-sac without finding any muscle whatever, owing to the great separation of the fibers which has taken place. Generally, also, as gestation advances atrophy of the fibers takes place in many parts. After the early weeks, the most important structure in the wall is connective tissue. The thickness of the wall varies in different parts. Marked thickening is usually due either to inflammatory de-

* *Vide* my "Ectopic Pregnancy;" 1589. Pentland; Edinburgh.

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posit on the outer surface or to hæmorrhage in the substance of the wall. Extreme thinness at any point is probably due to a variety of factors: *e. g.*, early separation of muscular bundles, stretching of an originally thin portion under the pressure of the growing ovum, sudden hæmorrhage taking place within the wall. According to some observers, it is stated that the wall is thickened opposite the area of the placental attachment. I cannot corroborate this opinion. It may appear to be thickened in section, but this is simply due to the number of large blood-vessels in the wall at this part or to hæmorrhages in it.

With the gestation-sac in such a condition it is not difficult to understand why it may rupture under varying stages: *e. g.*, sudden increase in blood-pressure in the pelvic vessels, sudden alterations in intra-abdominal pressure, such as are produced by blows, falls, strains, etc., distension of the tube from hæmorrhage within it. The nature and extent of the rupture vary greatly in different cases. It may be of considerable size or extremely small, and may be rounded, linear or irregular in appearance. It may be found in the placental or non-placental part of the wall or involving both. When the former is involved, the bleeding is generally most severe and dangerous. The whole ovum, or part of it only, may pass through the rent into the peritonæal cavity. According to Orthmann, complete passage occurs in the majority of instances. Sometimes the opening may be plugged tightly or loosely by the fœtus or placenta, so that the hæmorrhage is wholly or partly checked. With such a number of conditions, it is easy to understand why so many different clinical pictures are presented in cases of hæmatocele.

In a large number of cases the out-pouring of blood is so sudden or so extensive that the woman's life is greatly endangered. Thus, Parry found that, out of 113 cases, 39 died within ten hours, 81 within twenty-four hours, and 98 forty-eight hours. In some cases, only a small hæmorrhage occurs at the time of rupture, followed at other periods by successive fresh losses. The intervals of cessation are due to various causes; *e. g.*, contraction and retraction of the torn vessel or of the part of the wall surrounding the rupture, or plugging of the opening by fœtus, placenta or membranes. It is important to note that a succession of small losses may prove very serious to the woman.

Sometimes a considerable accumulation of blood takes place within the tube before the wall is completely ruptured into the peritonæal cavity. This accumulation may be found in the cavity, between the wall and placenta or membranes, in the lumen of the tube external to the ovum, or in the substance of the wall itself.

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In other cases, after rupture, the blood may escape into the peritonæal cavity very slowly, or only in limited quantities, owing to the obstruction to its movement resulting from inflammatory deposits on the gestation-sac or from adhesions to neighboring viscera. Sänger* has drawn special attention to the limitation and localization of intra-peritonæal blood effusions as a result of a previous formation of peritonitic adhesions.

The period of pregnancy is, also, probably an important factor in determining the blood loss. In the early weeks there is more probability, in the majority of cases, of a quick arrest of hæmorrhage than at a more advanced period and, consequently, of less immediate risk to the mother; this is due to the fact that the vessels in the wall of the gestation-sac are not greatly enlarged and that the musculature is not too much altered to contract on the torn vessels so as to check the bleeding. Yet it must be remembered that, sometimes, rupture, in very early cases of tubal gestation, may lead to a rapidly fatal issue. This is much more liable to occur after the placenta is well formed, owing to the great development of blood-vessels in that part of the sac-wall to which the placenta is attached.

In the early months, also, the mass which escapes into the peritonæal cavity is more likely to be absorbed quickly than in advanced pregnancy, because in early cases the absorptive power of the peritonæum is less apt to be interfered with by inflammatory changes than where gestation has lasted for some time. Moreover, the early ovum may be easily absorbed by the peritonæum, whereas, when the placenta is well formed, and the fœtus of some size, absorption is more difficult. In the latter case it may be partly absorbed, or may, with or without partial absorption, become encapsulated by peritonitis. This may sometimes lead to a fatal issue; suppuration may occur or the fœtus may become shrivelled or changed into a mass of adipocere or into a lithopædion.

There seems, indeed, little doubt that the risks to the mother from rupture during the first weeks of pregnancy, are less than in the succeeding months.

Another factor of importance is the condition of the fimbriated end of the Fallopian tube. In early tubal gestation this is patent in a far greater percentage of cases than in more advanced cases. In a small number of early cases it may be closed by perisalpingitis or by adhesion to neighboring structures, but this is more usually found after pregnancy has advanced. The size of the opening varies; it may be naturally large or small, but it is also effected by the situation of the

* *Verhandl. d. deutschen Gesellsch. f. Gyn.*, 1893.

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gestation. The nearer the ovum to the outer end of the tube the more it is apt to be dilated. When inflammatory changes occur in the peritonæal covering, the tube may be completely or only partially closed. In view of these various conditions, it is evident that, in considering the fimbriated end of the tube as a way by which intratubal blood may escape into the peritonæal cavity, the possibility of several variations in the amount and rapidity of the blood-stream must be admitted.

The origin of hæmatocele, in an escape of blood through the outer end of the tube, is more frequent than is supposed. In Cullingworth's 20 cases, it is very interesting to note, the hæmorrhage occurred in this manner; in the greater number the outpouring had taken place slowly, the blood becoming clotted and encapsuled so as to form a localized mass. According to this author, it is very rare that the blood escapes so rapidly as to become widely diffused throughout the peritonæal cavity. He believes, and I am in agreement with him, that the majority of the favorable cases of hæmatocele are those in which the escape of blood takes place through the open end of the tube in very early tubal pregnancy.

That this form of hæmorrhage should be frequent is not surprising, when we consider the relationship of the early ovum in tubal gestation. In my study of the developmental changes in this condition, I have pointed out the circumstances especially favorable to the occurrence of intratubal hæmorrhage. These are as follows: The decidua reflexa is usually extremely thin and may not be completely formed. It is prone to undergo very early degenerative changes of the nature of coagulation necrosis. The vessels tend to rupture easily; indeed, I have never examined a specimen in which blood was not effused in its substance. Very important, however, is the relation of the reflexa to the placenta. In normal uterine pregnancy, in the great majority of cases, the chorion læve, attached to the reflexa, gradually degenerates and disappears, the chorion frondosum only, which is attached to the decidua serotina developing to form the permanent placenta. It is rare that the chorion læve develops in a portion of its extent, forming the so-called reflexal placenta, continuous with the serotinal placenta. In tubal gestation it is, on the other hand, very common to find the permanent placenta developing partly on the reflexa. (The reason of this is evident when one bears in mind the very small area of the tube wall which can give rise to a serotina as compared with the condition existing in uterine pregnancy.)

The development of large vessels, to supply the intervillous circulation, in a reflexa which is very thin and degenerated, is probably, there-

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fore, an important cause of the very frequent hæmorrhages which occur within the Fallopian tube in early pregnancy. The reflexa may rupture so that blood may escape either on its inner surface coming into relationship with fœtal structures, or on its outer surface, forming a mass in the tube lumen.

The blood which passes through the fimbriated extremity may be accompanied with part or whole of the fresh gestation products—a condition known as "tubal abortion." In some cases the blood alone escapes. Abortion is most likely to occur during the first two months of gestation while the outer end of the tube is patent. It can also take place if the end be closed with recently formed weak adhesions.

In 32 cases reported by Mackenrodt, abortion occurred during the first month in 8 cases, during the second month in 19 cases, during the third month in 4 cases, and during the fourth month in 1 case.

In 29 cases reported by Orthmann, it occurred: The first month in 13 cases, the second month in 10 cases, the third month in 4 cases, and the fourth month in 2 cases..

In most cases, according to Orthmann, the ovum is completely expelled. This is most apt to occur when gestation is in the outer part of the tube, though it is possible for the ovum to be moved some distance by the contractions of the muscular part of the tube wall, the contents passing in the direction of least resistance.

Lawson Tait objects to the use of the term "tubal abortion" on the ground that practitioners may be led to consider the condition as of no greater seriousness than an ordinary "uterine abortion." Such a mistake on the part of a physician could only be due to abject ignorance. Tubal abortion leads to various results as far as the woman is concerned, one of the most important being the fatal issue which occurs in some cases. A large amount of blood may be quickly poured into the peritonæal cavity, endangering her life, and death may be immediate, or delayed only for a few hours. In other cases a large hæmatocele may be formed, the woman remaining in a critical condition for some days, and then undergoing a long period of recovery. Sometimes, only a localized mass may form.

As regards the ovum, various changes take place; if gestation be early, it may easily be absorbed when escape takes place into the peritonæal cavity. After the early months, when the placenta is a well-formed structure, partial or total escape of it into the peritonæal cavity with or without the fœtus, is probably always fatal from the amount of blood poured out, unless immediate operation be carried out. In some cases, as Orthmann has pointed out, very little blood may be

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found with the ovum after it has passed into the peritoneal cavity, though blood-clot may be found in the tube itself. Such a combination, according to this author, is never found when the escape of the ovum takes place through a rupture in the tube-wall; in such a case, blood is always found in a peritonæal cavity. While Orthmann's observations are quite correct, it is probable that, in the majority of cases in which no blood was noticed by him in the peritonæal cavity along with the ovum, there had been some escape of blood followed by rapid absorption through the peritonæum.

In certain cases the ovum does not pass into the peritonæal cavity as a fresh abortion, but as an altered mass known as a "mole," formed by extravasations of blood into the membranes and placenta, the fœtus being killed and more or less destroyed. The older the mole the less likely is its passage through the end of the tube to be accompanied with marked loss of blood.

In comparing the effects of escape of the ovum through the fimbriated end with those following its passage through the ruptured wall it is found that, in the latter condition, the mother runs greater risks, for there is more likelihood of free intraperitonæal hæmorrhage taking place. In nineteen cases reported by Callingworth in which escape occurred through the end of the tube a free effusion of blood took place only in one instance; in the great majority of cases a localized pelvic hæmatocele was formed. In nine cases, in which rupture of the tube-wall occurred, free intraperitonæal hæmorrhage took place in seven.

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MALFORMATION OF THE UTERUS.

By Frank T. Andrews, M.D., Chicago.

As briefly as may be, I wish to present two cases of abnormal female genitalia. The first, a girl of twelve years, brought to me in November, 1899, by Dr. McKay of this city.

Dr. McKay stated that the girl had all the symptoms of menstruation at normal intervals six or seven times, but without menstrual discharge. At each period the pain was intense. He had examined and discovered entire absence of the vagina with much enlarged uterus and tubes. My examination verified his statement in every particular.

The vulva was normal; the hymen perfect. The uterus was large and the tubes much distended. Knowing the difficulties of maintaining an artificial vagina of proper caliber and length, and believing that the tubes were functionally destroyed by occlusion, I advised hysterectomy, but could not get consent of the friends. I therefore proceeded to make a vagina.

Splitting the recto-vesical septum from the hymen upward I discovered the cervix imbedded in and continuous with the connective tissue. As the external os was absent, I made an opening into the cervical canal. About a teaspoonful of brown-colored mucus was discharged from the cavity.

Further exploration showed absence of the internal os. On account of the difficulty of cutting with precision at this level, I determined to examine further. I therefore made an opening into the cul-de-sac of Douglas and examined the pelvic contents. I found the uterus much enlarged and both tubes occluded at their fimbriated extremeties and greatly distended.

I reported the result of this exploration to the friends of the patient and secured their consent to the extirpation of the organs. Through an abdominal incision, I removed the specimen which I present for your consideration. During the removal, the right tube ruptured. The abdominal wound was closed, and a gauze drain placed in the artificial vagina. The patient promptly recovered. I wish to thank Dr. H. T. Byford for his aid and advice during this operation. The specimen as you see it almost speaks for itself.

The incision into the cavities of the body and the cervix is, of

* Read. For *Discussion*, see page 102.

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course, post-operative. You will note the artificial opening where the external os should be; also note the absence of the inner os. Observe also that the uterus is subseptate—almost bicornate. The size of the uterus and the distension of the tubes are evident.

A point of interest in the case was the discharge of brown-stained mucus upon opening the cervical canal, showing that even the mucous membrane of the cervical canal contributed slightly to the menstrual flow.

Next, permit me to report a case having:

(*a*) Bicornate uterus,
(*b*) Double vagina,
(*c*) Double vulva,
(*d*) Imperforate anus,
(*e*) Recto-vaginal fistula.

This patient was born 29 years ago. When she was four weeks old, Dr. Reddy of Montreal made an artificial anus. When she was eight months old, the anus having contracted, Dr. Brewer of St. Louis operated. After both of these operations the fæcal discharges continued *per vaginam.* About ten years ago, the patient having removed to Chicago, was under the care of Professor Henry P. Merriman. Professor Merriman finding the anus again contracted, called upon Professor Edmund Andrews to operate. The result of this operation was a functionally perfect anus. Some months later Professor Merriman called upon me to effect a closure of the recto-vaginal fistula. The operation was successful and the normal function fully restored.

At this operation I discovered a small opening to the right of the vaginal orifice. Inserting a probe and afterward enlarging the opening, I found a second vagina as large as the other. The vulva was double to the extent shown in the diagram (Fig. 2). You may see that the labia majora are rather broad. There were two clitorides with two pair of labia minora; the left labium of the right pair being incomplete. There were two vaginal orifices, the left one large, the right minute. There were apparently two meati urinarii; that belonging to the right vulva was only a dimple. That belonging to the left vulva was the true orifice of the urethra. The vaginal septum extended up to the single cervix, which opened into the left vagina. This septum I divided with scissors from vulva to cervix.

In the spring of 1899, eight years having elapsed, I was informed by Professor Merriman that our patient was still in perfect health; that she had married and was about to be confined and that he felt

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confident that she would suffer a complete laceration of the recto-vaginal septum (there being no perineal body).

As I was familiar with the conditions, he wished me to attend her during his absence. During the first stage of labor, I called Dr. C. E. Paddock as consultant in the case. After hearing the history he made a careful examination and pointed out that the uterus was subseptate and perhaps bicornate (Fig. 3) and that the pregnancy was in the right side. The septum could be felt in advance of the child's head. (Fig. 4). Subsequent events proved this to be correct. After a tedious labor a perfectly formed child was born. The child was dead. There was no pulsation in the cord. Immediately after the delivery the mother became faint. Her pulse became extremely rapid, in a few moments it reached 180 beats to the minute, became uncountable and then imperceptible at the wrist. Elevation of the feet, stimulants, and saline injections restored her to consciousness and reëstablished the heart's function. In a few minutes the attack was repeated. During the next twelve hours ten such attacks occurred, of gradually diminishing severity and at increasing intervals. The pulse, between the attacks, was nearly normal.

The placenta being retained, Dr. Paddock removed it by introducing the hand into the uterus. He found the uterus to be bicornate. About three-quarters of the placenta was in the right horn, the remainder projected into the cavity of the body of the uterus and of the cervix. (Fig. 5.) The cord was attached to the upper part of the placenta. The placenta was molded to the form of the cavity in which it lay. The lower quarter was marked off from the upper segment by a distinct groove, showing how the uterus in its contraction had retained the placenta and compressed the cord at the point where the cord passed out of the right cornu. As was predicted the recto-vaginal septum was torn completely through. The patient's condition made it unadvisable to perform an immediate perineorrhaphy. Two months later the parts were repaired. The result was good. The function of the anus is well performed.

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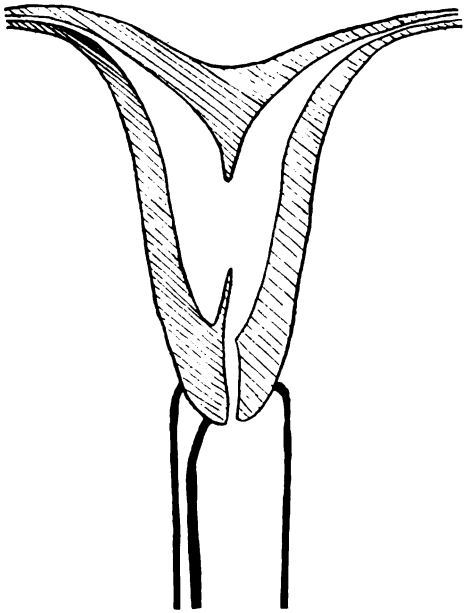

FIG. 3.

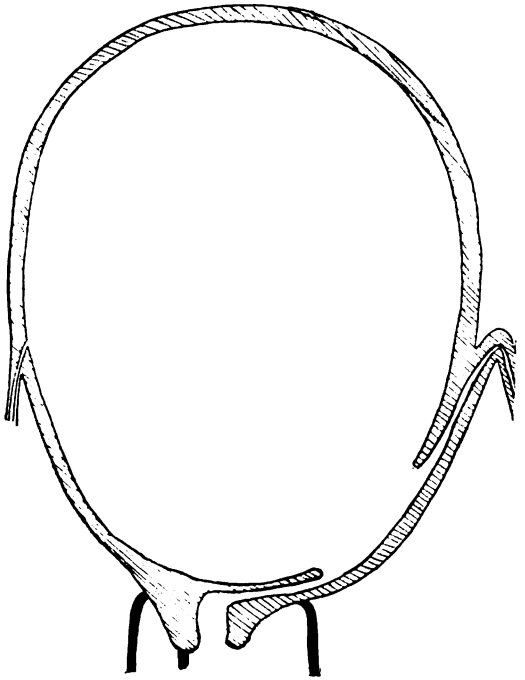

FIG. 4.

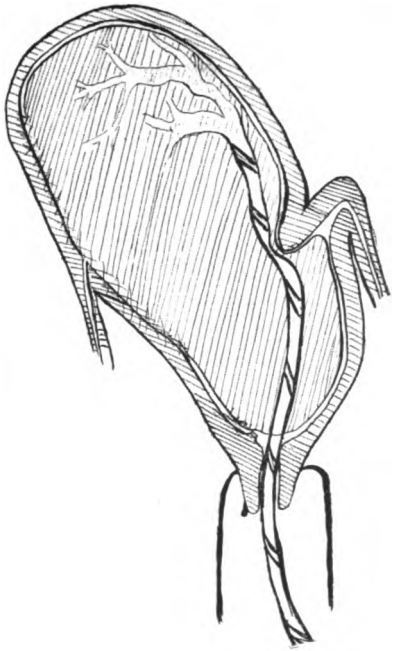

FIG. 5.

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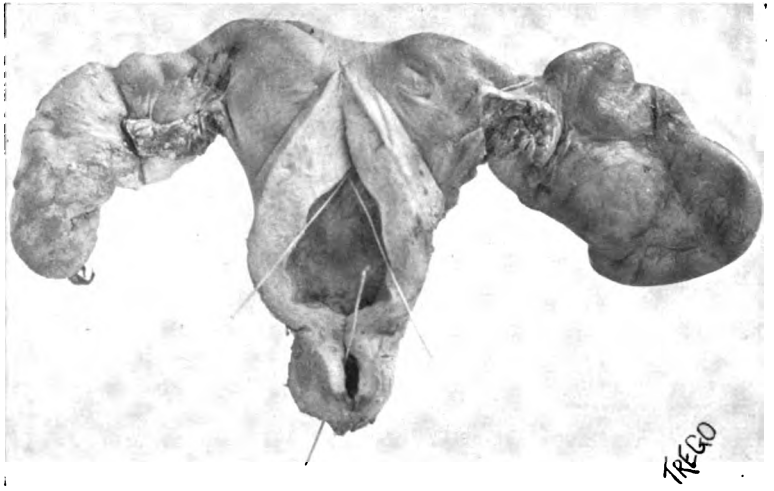

FIG. 1.

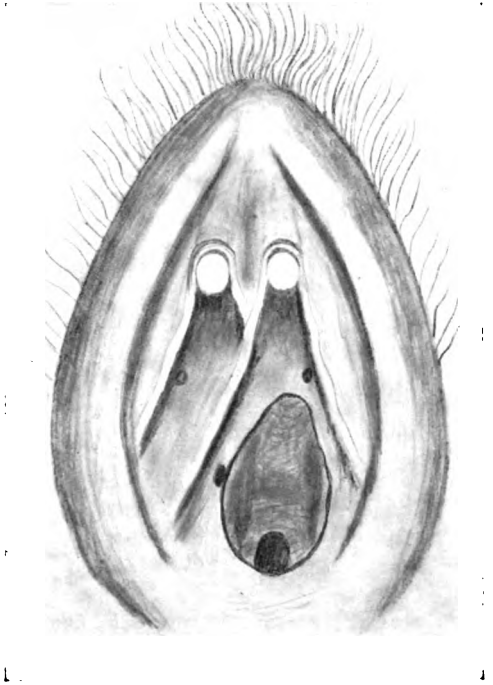

FIG. 2.

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FŒTAL MALFORMATION: SYMELUS.*

By A. McDiarmid, M.D.,
Adjunct Professor of Obstetrics, College of Physicians and Surgeons; Professor of Obstetrics and Gynæcology Post-Graduate Medical School, Chicago.

Through the courtesy of Dr. Henry W. Berard, in whose practice the fœtus was obtained, I am enabled to present this specimen to the Society.

This remarkable malformation is one of a rare variety called the *siren formation* (*symelus*). There is in this variety a cohesion of the entire lower extremities, the deformity of the skeleton extending to the pelvis. There may be cohesion of the soft parts only, the bones of the thighs and legs being separate, or these may be fused together as in the present instance. When the fusion is very close the orifices of the anus and genito-urinary systems are obliterated, and, as in this case, no trace of them is apparent.

It is to be remarked that the bones are rotated on their long axes so that the anterior surface of the limb lies posteriorly, which is the rule in the early periods of embryonic life. Where the skeletons of the two limbs remain separate the fibulæ lie internally to the tibiæ. You will observe here that the knee-joint is reversed—that the flexor side lies anteriorly. The rotation is outward in front. The foot is absent, the limb terminating about midway between the knee and ankle.

There is only one artery in the umbilical cord, as is readily understood by the absence of the femoral and iliac vessels of one side.

As expressing the coalescence of the lower extremities this deformity is called *sympodia,* and this particular variety, owing to the absence of the feet, is called *sympus apus.*

Great credit is due Mr. E. Soegaard and Mr. P. B. Conant of the X-ray laboratory of the College of Physicians and Surgeons, for their investigations and the preparations of the skiagraphs and photographs presented.

The causation of malformations and defects has been ascribed to amniotic bands and adhesions. It is quite comprehensible how amniotic bands may produce amputations of limbs, or adhesions to the fœtus produce imperfect union in the anterior or posterior median line of the body, but that they could produce this deformity does not seem feasible.

* Read.

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Experiments on the eggs of birds and frogs have shown that shaking the egg, tapping, partial varnishing, slightly raising or lowering the temperature during incubation, or the erect posture of the egg, have

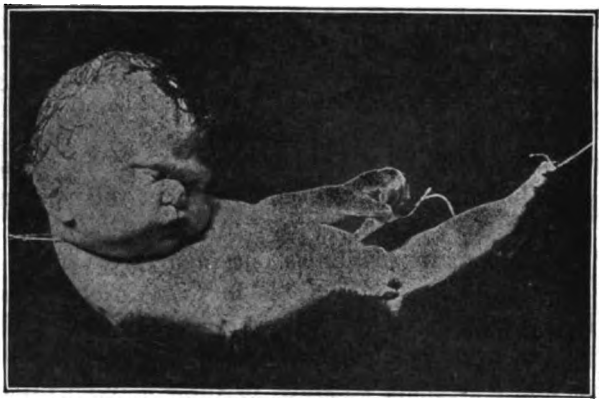

Fig. 1.—Symelus. Lateral View.

produced double monsters especially, but only if applied within the first forty-eight hours of incubation. In other cases the interference deranges the vascular system, impairs nutrition, and leads to numer-

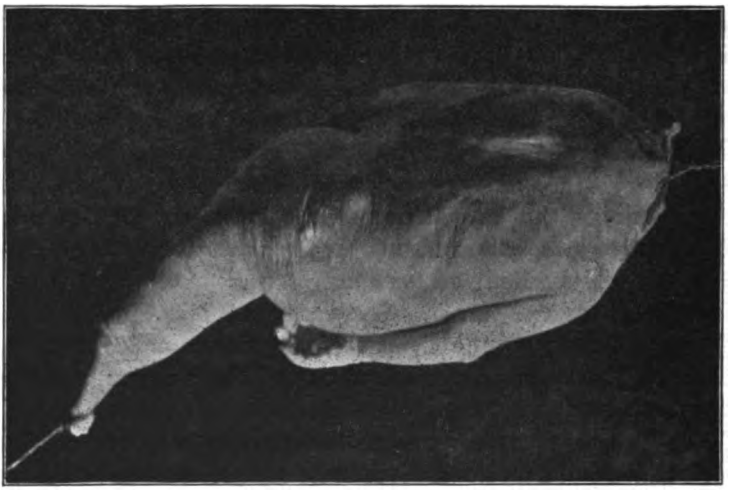

Fig. 2.—Symelus. Posterior view showing ano-genital region.

ous malformations. Trauma has been assigned as a possible cause in the human fœtus, and it is interesting that in this case there were several unsuccessful attempts to induce abortion.

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The more probable cause of malformation lies in a primary defect in the germinal area of the ovum. The different external malformations of the extremities, due to defects in the germinal area, are frequently combined with and stand in close relation to those of the in-

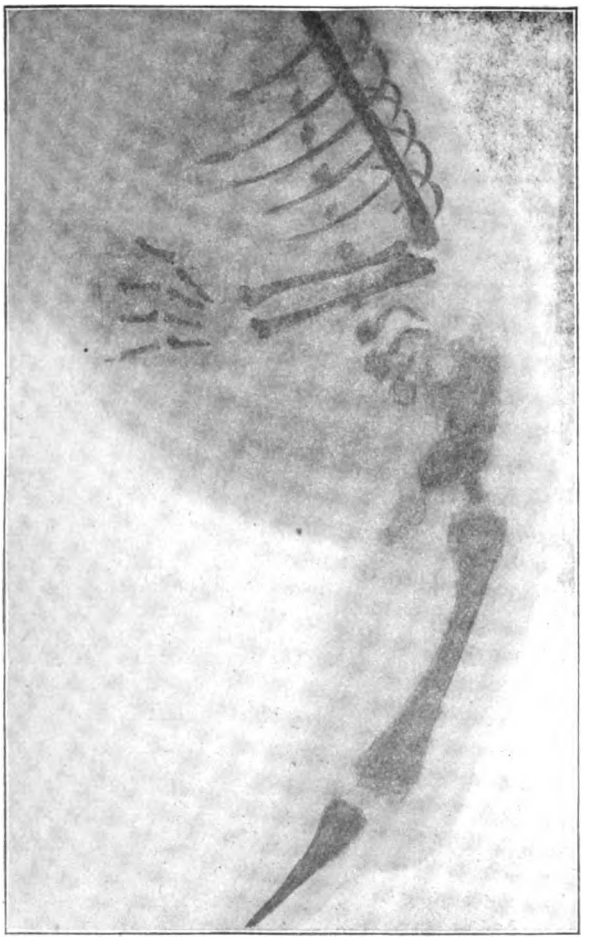

Fig. 3.—Symelus. Left lateral view, showing knee reversed.

ternal organs, to those of the anterior line of closure of the body and to malformations of the central nervous system. Those of the extremities are relatively frequently accompanied by malformations of the central nervous system. There is often spina bifida but neither this nor any other defect is observable in this case.

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The question of maternal impressions might be raised in this connection. In this case there is no history of profound maternal impression.

The child lived about fifteen minutes after birth. There was no

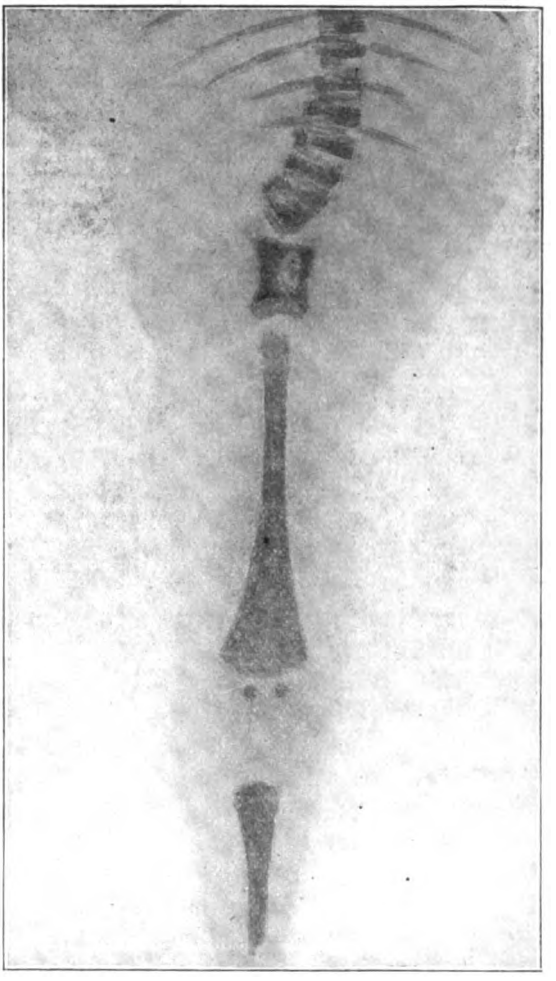

Fig. 4.—Symelus. Anterior view.

liquor amnii but an extraordinary quantity of vernix caseosa, estimated at eight ounces, in addition to that thickly covering the surface of the child.

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TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, January 19, 1900.

The *President,* T. J. WATKINS, M.D., in the Chair.

Spontaneous Amputation of the Tube.

Dr. EMILE RIES: I desire to report briefly a case of spontaneous amputation of the tube because it coincides closely with those I reported at the last meeting. The case was one of chronic appendicitis with thickening of the appendx, adhesions starting from the tip of the appendix, going towards a point of the tube, where the tube was almost cut in two, the two parts being connected only by a thin band of tissue. This tube was occluded at the abdominal end and terminated in a hæmatosalpinx. The hæmatosalpinx was twisted three hundred and sixty degrees. This is the fourth case of amputation of the tube in my experience.

DISCUSSION.

Dr. E. C. DUDLEY: I have had one case of absence of the tube upon which I operated several years ago. The band which probably cut off the tube was not very demonstrable. The tube had been cut off less than one-eigth of an inch from the uterus and the remainder of it was absent.

I also record another case in which a band had almost cut off a catarrhal appendix vermiformis. The cord half way surrounded the appendix. I successfully operated at St. Luke's Hospital for the removal of this appendix last week.

Intraperitonæal Hæmorrhage considered in Relation to Ectopic Pregnancy.

(Inaugural Thesis.)

BY J. CLARENCE WEBSTER, M.D.

(See page 84.)

DISCUSSION.

Dr. FERDINAND HENROTIN: I have listened with pleasure to the

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remarks of Dr. Webster upon this, one of the most interesting subjects we have in gynæcology and in abdominal surgery, and one in which I think we all have had more or less practical experience. The name of the doctor is particularly well known in connection with this branch of surgery, and it is proper to remark that the whole profession owes him a great deal for his work in that particular line. His demonstration of decidual formations in the tubes has cleared up a great deal of the darkness that shrouded the subject. The doctor gives us practical facts concerning hæmorrhage, many of which have come under our notice. There is one particular point on which I feel inclined to take exception, and that is as to the frequency of hæmorrhage in the early months of extra-uterine pregnancy. If I understood him correctly, he says the tube wall being less disintegrated at that time, it is more likely that the vessels can contract and the hæmorrhage cease. Practically, it has been my experience, and I have had a great many cases of extra-uterine pregnancy, and as far as my reading goes, that in the early cases we have large and dangerous hæmorrhages. The way that I look at the subject is that, as a rule, a large proportion of the more advanced cases, after they have passed the second month, are apt to be extra-peritonæal; they break partially within the folds of the broad ligament, and are covered more or less by peritonæum and form the ordinary hæmatocele; while the early cases rupture into the abdominal cavity and produce profuse and frightful hæmorrhages. I cannot remember a case in which any very large hæmorrhage of a dangerous character occurred much beyond the second month. I reported a case two months ago where, after the most careful examination of the specimen, all we could make out was a three weeks' pregnancy. This woman was taken with hæmorrhage at four o'clock in the afternoon, and at twelve o'clock at night, when I operated, she was practically pulseless. There was an extreme degree of depression. I have operated on a number of cases from four to five, to six and seven weeks, all of these cases being accompanied by excessive hæmorrhage. I believe that Lawson Tait and most of the authorities agree that it is these early cases that are liable to produce primary intraperitonæal rupture, with intraperitonæal hæmorrhage of large quantity, that so frequently prove fatal.

I operated on this woman on Tuesday night last at a farmhouse, seventy-five miles from this city, during the middle of the night. The case is interesting in that the woman never had any menstruation whatsoever to indicate the possibility of pregnancy, and was only five days beyond her last menstruation. It was thirty-three days since her pre-

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vious menstruation. There was no hæmorrhage, no decidua shedding or anything of that kind, still the picture was so plain as to make it unmistakable. A large quantity of blood was found in the abdomen.

The thanks of the Society are due to Dr. Webster for his exposé of the relation of hæmorrhage to these cases, and it is a matter of congratulation that we have him with us.

Dr. E. C. DUDLEY: I have nothing to add to the excellent résumé of the subject except a word of approval. I listened for an expression of opinion as to how frequently these intraperitonæal hæmorrhages occur from other causes than tubal pregnancy, and in the absence of any statement on that point I infer that Dr. Webster is in accord with the accepted view on the subject, which is that those hæmorrhages seldom, if ever, occur except as the result of tubal pregnancy.

Dr. T. J. WATKINS: The statistics relative to the time of rupture is given in quite a number of instances at four, five, and as late as the seventh or eighth month. It would seem from clinical experience that this is an error, and that it is impossible for pregnancy to go on beyond the third or fourth month without the tube rupturing on account, first, of the physics involved, and, second, of the muscle changes in the tube which Dr. Webster has described. Probably the facts in those cases are that the rupture referred to is not the primary rupture. Relative to the point Dr. Henrotin brought up, it would seem that the comparatively small amount of hæmorrhage in the latter months in some cases might be due to the fact that a previous rupture has caused adhesions and that the adhesions would tend to limit the hæmorrhage that would occur at the time the principal rupture took place.

Dr. WEBSTER (*closing the discussion*): I thank the gentlemen for the manner in which they have received my paper, and particularly Dr. Henrotin for his kind remarks. I wish to refer to one point mentioned by him. I suppose that one is always influenced by more recent observations, and in the cases of the last four years that have come under my notice, I have been particularly struck with the number of early ruptures, *i. e.*, within the first four weeks, not in which a cessation of hæmorrhage had occurred. In referring to this point in my paper, I have given what appears to be the most reasonable explanation for it, *viz.*, contraction of the muscle in the tube wall, yet I have also taken care to emphasize the frequency of fatal unchecked bleeding in early ruptures. Of course, to get an accurate idea of percentages, it will be necessary to collect a large number of statistics. Perhaps one is wrong to be influenced by one's own recent experience on such a point. I am very glad Dr. Henrotin called attention to it because it is important that

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one should not try to mislead in any way in dealing with such an important matter.

Dr. Dudley is quite right in the supposition that cases of intraperitonæal hæmorrhage are rarely due to other causes in women than to ectopic pregnancy, leaving out ruptures of ulcers of the stomach, traumatism, etc.

With reference to the remarks of the President (Dr. Watkins), I tried to make some time ago an examination of those cases in which rupture was reported as occurring in the late months. It seemed very unlikely that in the seven and following months of ectopic pregnancy, there could be serious hæmorrhage external to the gestation sac, because of adhesions and of pressure conditions within the abdomen. But these cases are referred to as hæmorrhage, without any reference to their gravity or to their relationship to the state of gestation; whether merely small hæmorrhages, or hæmorrhages leading to dangerous conditions, have not been generally mentioned. But one must accept statistics as they are presented in tabular form by various authors, all of whom are men of the highest standing.

Dr. HENROTIN: I would like to ask Dr. Webster if it is not a fact, well established now, that in nearly all instances, though it may vary in degree or amount, that we always find decidua formed in the tubes. He has examined a great many specimens. I know what he says in his book.

Dr. WEBSTER: In regard to this point, I should like to state most emphatically, after having examined many specimens, that I have never failed to find decidual transformation, though it varies greatly in its development. It is absurd to speak of decidual transformation in ectopic pregnancy as Mr. Bland Sutton does, in his book on "Surgical Diseases of the Tubes and Ovaries," where this subject is treated in very scant fashion. The most important workers in this field since my researches were published have been Germans (one need not mention their names), some of whom have, in recent years, made elaborate studies of tubal gestation, and I do not know of a single one who makes a statement in support of Mr. Bland Stutton.

Malformation of the Uterus.

BY FRANK T. ANDREWS, M.D.

(See page 92.)

DISCUSSION.

Dr. HENRY F. LEWIS was asked to discuss this paper. He said:

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The development in this case makes one think that it is something like the famous case of Blanche Dumas, but of less degree. In her case the two vulvæ were farther apart, and a third leg was between them. This looks as though it might be a much less marked case of dipygus (double pelvis). It would be interesting to see if, on dissection, there was any duplicity whatever in the bony parts of the pelvis. The diphalic monsters are by many teratologists considered to be double.

As to uterus bicornis, the question arises as to what was the cause of the failure of union of the Müllerian ducts. Behind that there is some other cause. The one given by Ahlfeld is that in the embryo the umbilical vesicle is for some reason or other held toward the caudal end of the embryo, so that the tension draws upon all the structures attached to the umbilicus, including the intestines and bladder, so that the latter are pulled forward, and a sort of vesico-rectal ligament forms between the two Müllerian ducts, causing, by their failure to unite, a greater or less duplicity of the uterus and vagina.

Fœtal Malformation: Symelus.

By A. McDiarmid, M.D.

(See page 95.)

Official Transactions.

C. S. Bacon, *Editor of Society.*

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INTESTINAL ANASTOMOSIS; CLAMP AND ENTEROTOME; A MODIFICATION OF GRANT'S ENTEROTOME; AN AID IN SUTURING.*

By Alexander Hugh Ferguson, M.D., Chicago,

Professor of Surgery, Chicago Post-Graduate Medical School; Surgeon-in-Chief, Chicago Hospital, etc.

The methods employed in effecting end to end, lateral and end to side intestinal anastomosis may be put into three classes:

I. Intra-intestinal Methods.—The severed bowels are coapted and held together by means of plates, buttons, bobbins, couplers, rings, cones, and sutures.

II. Extra-intestinal Methods.—The continuity of the bowel is restored or a new passage for alimentary contents is obtained by the aid of continuous, interrupting or interlocking sutures, that are applied from the peritonæal surface of the bowel.

III. Combination Methods.—In this class intra- and extra-intestinal means are utilized. One portion of the operation is done by mechanical supports or sutures from within, and it is finished by externally suturing the serosal surfaces together.

The history of intestinal surgery gives priority to the suture as a means of closing wounds of the bowels, and after trying many ingenious devices the tendency now in surgical art is to again come back to the needle and thread. It is not to be expected that all contemporary surgeons will ever adopt the suture in anastomosis as the only safe means of doing the operation, because (1) mechanical appliances have established their safe usefulness; (2) there are conditions that occasionally arise where the suture is not the best, and (3) it is not every surgeon who is able or ever can acquire the skill to sew neatly and accurately. Nature is wondrous kind to the suture employed in almost any other part of the body, but in intestinal work, let the antiseptic and aseptic precautions be what they may, the inaccurate use of it is followed by leakage, septic peritonitis and death. Too stout a needle, too coarse a thread, too much space between the sutures are palpable causes of failure. In enterorrhaphy union has been usually aimed at through coaptation of the smooth serous surfaces. It is, however, well estab-

* Read. For *Discussion*, see page 140.

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lished that serosa has no tendency to become adherent to serosa, and only does so in response to traumatism of it, allowing plastic lymph to be thrown out to repair the damage. The needle in passing through the

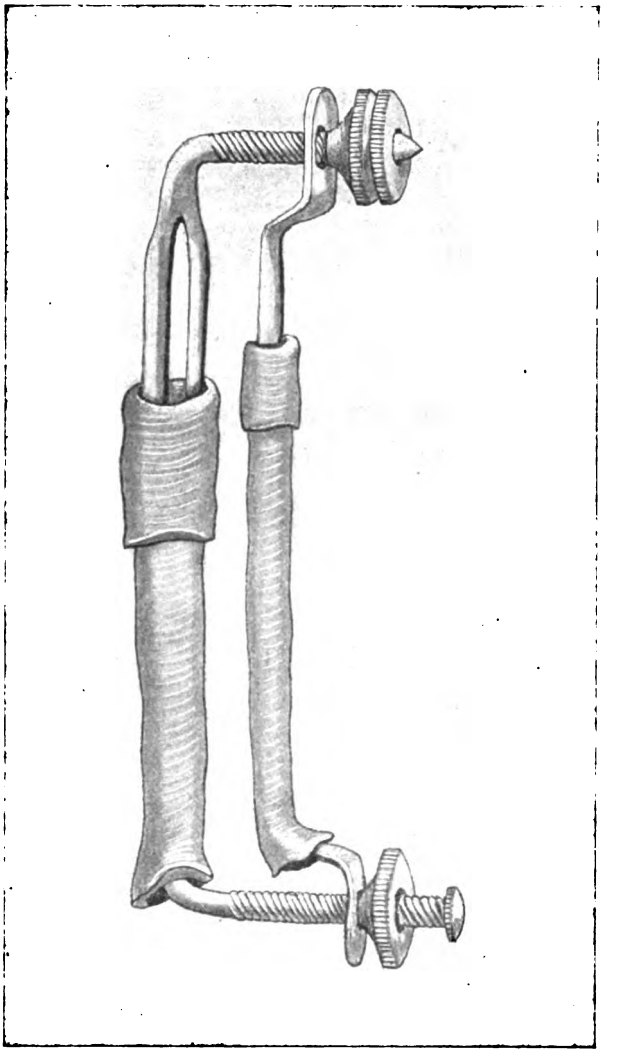

FIG. 1. Intestinal Clamp.

peritonæal coat many times injures it, then it will be observed that at the stitch-holes, and at the contused and lacerated spots, caused by the

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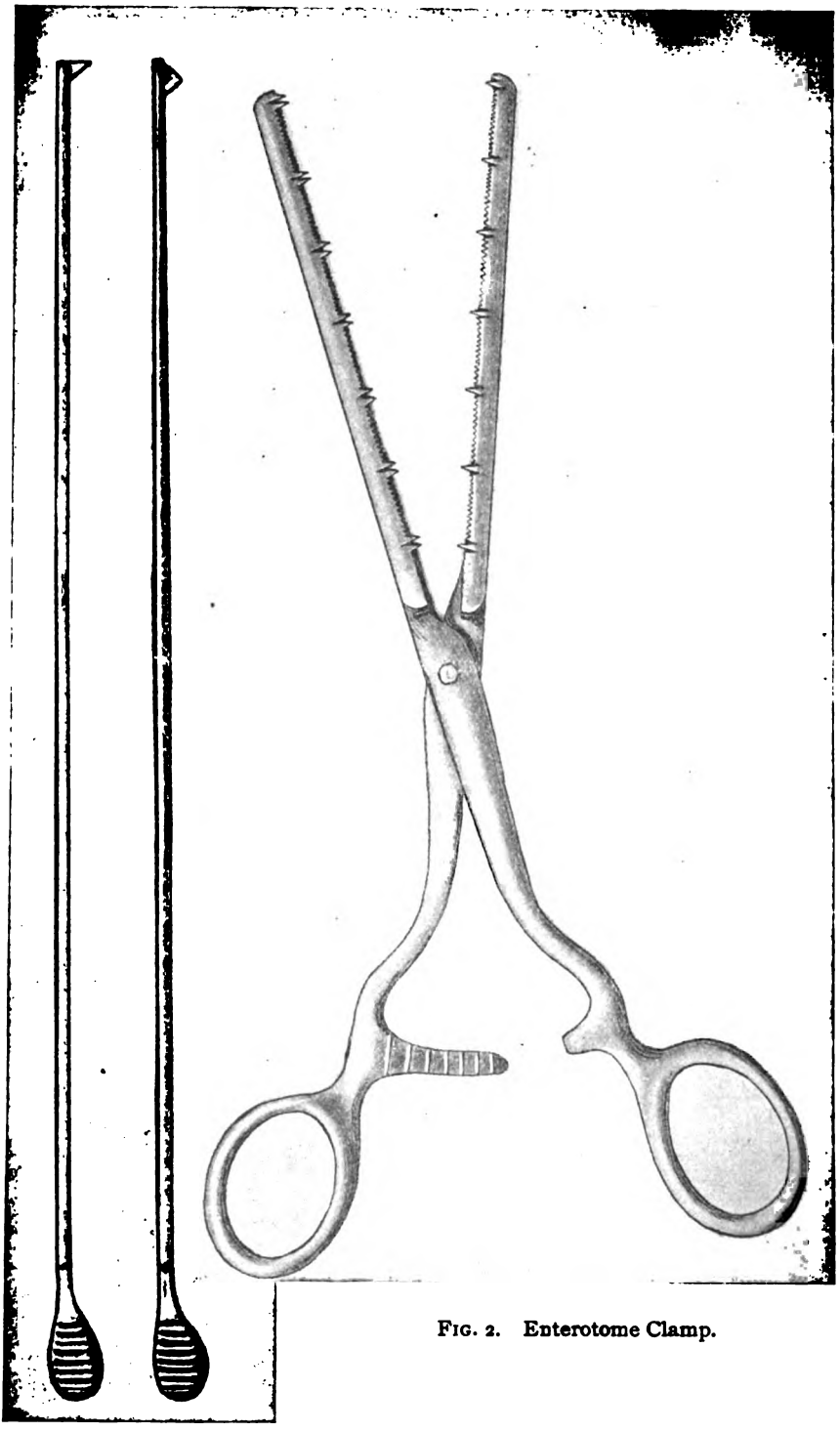

FIG. 2. Enterotome Clamp.

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tying of the sutures, the so-called "serp-serous adhesion" takes place very rapidly, which forms the primary adhesion of the bowels and is

FIG. 3. Lateral Anastomosis.

yet to be supplanted by granulation tissue, etc., before the union is permanent. If the stitches are too far apart, not properly tied, etc., the

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primary adhesion of lymph is either deficient or soon gives way under the slightest stretching of the gut. The more serosa left between the

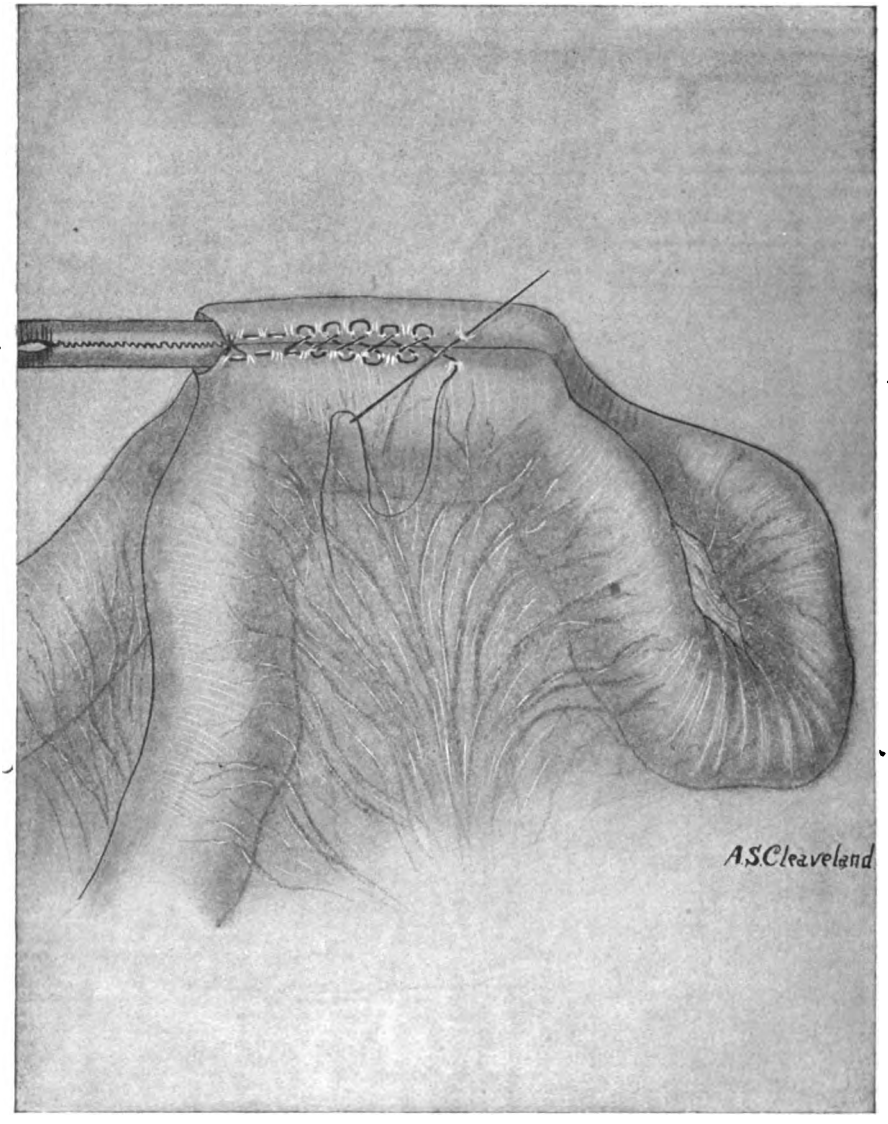

FIG. 4. Lateral Anastomosis. Ferguson's Continuous Suture.

stitches, the greater the danger of leakage. To overcome this it has

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been recommended to freely scratch it with the needle, so that the lymph would be thrown out abundantly. It has been found if the serosa is

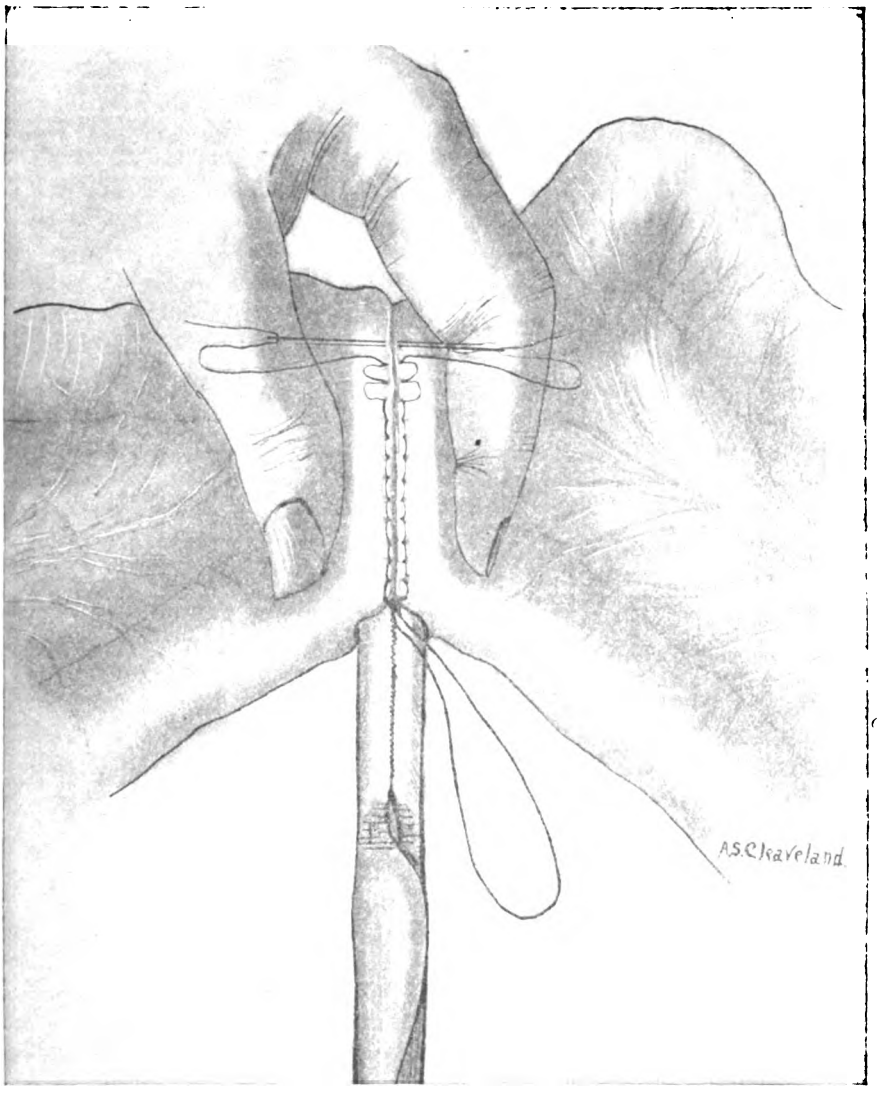

FIG. 5. Lateral Anastomosis. Cobbler Interlocking Suture.

too broadly scarified, that undesirable adhesions form at the sites of traumatism. The bowel must not be scarified beyond the line of sutures.

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All that is necessary is to remember that the free serosa between the stitches is the smooth hole for leakage, and a single scratch over it from

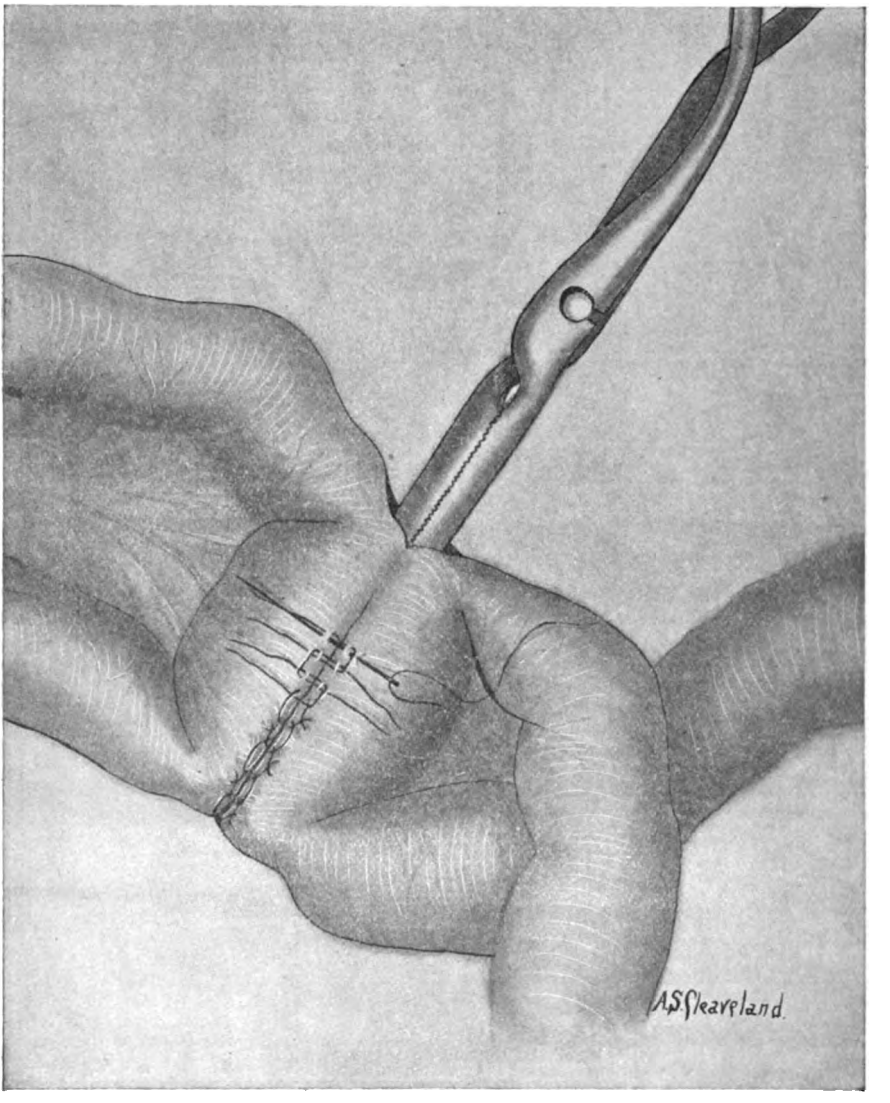

FIG. 6. Lateral Anastomosis. Turck's Interlocking Suture.

thread to thread after the sutures are tied is sufficient. It must also be borne in mind that the primary lymph, even though very abundant,

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does not, when the stitches are too far apart, prevent leakage from within the bowel, for organization of it is a late process.

Some surgeons would have us believe that union by "sero-serous lymph" takes place more rapidly in peritonæum than "lymph union"

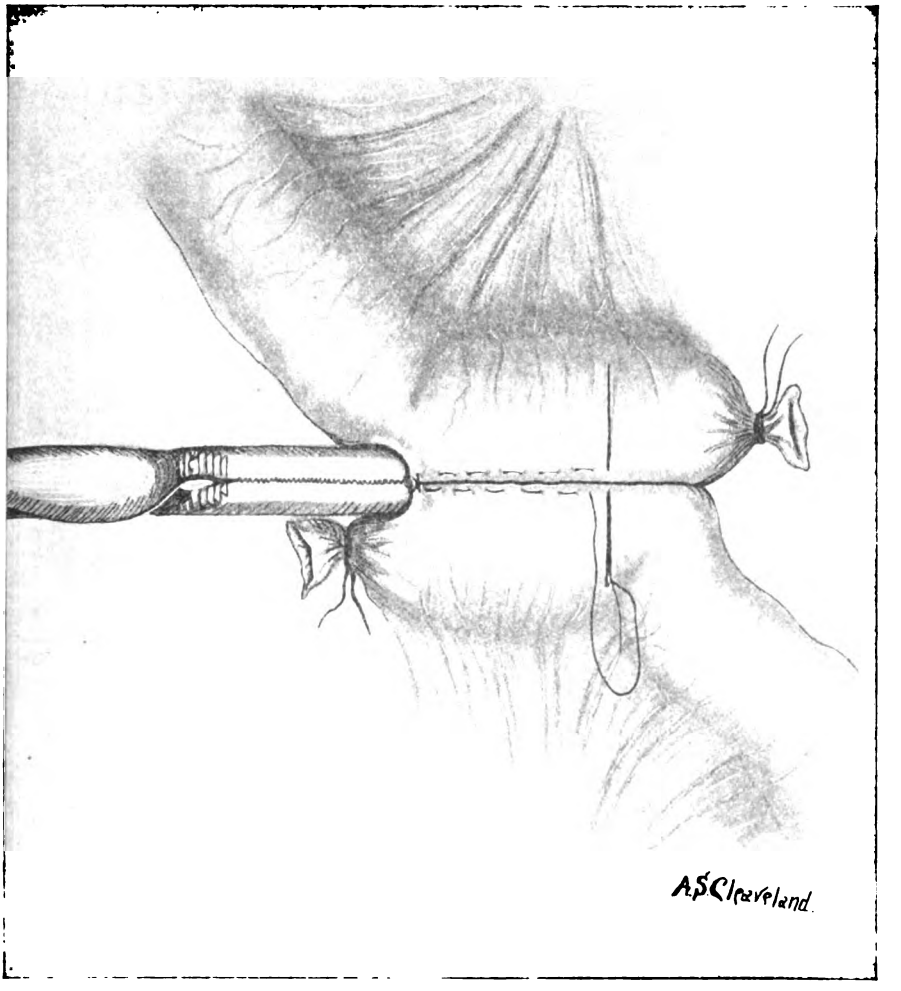

FIG. 7. Lateral Anastomosis. Cushing's Suture.

in the repair of other soft structures of the body. This is a mistake. The plastic material (lymph) is exactly the same, whether it comes from the injured capillaries of the serosa or from the capillaries in other

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soft structures, and is thrown out in all wounds immediately after the injury.

It has been established by Halsted that for the stitches to be always safe, the firm fibrous submucosa must be properly grasped by the needle, and then the threads can be tightly tied without the danger of

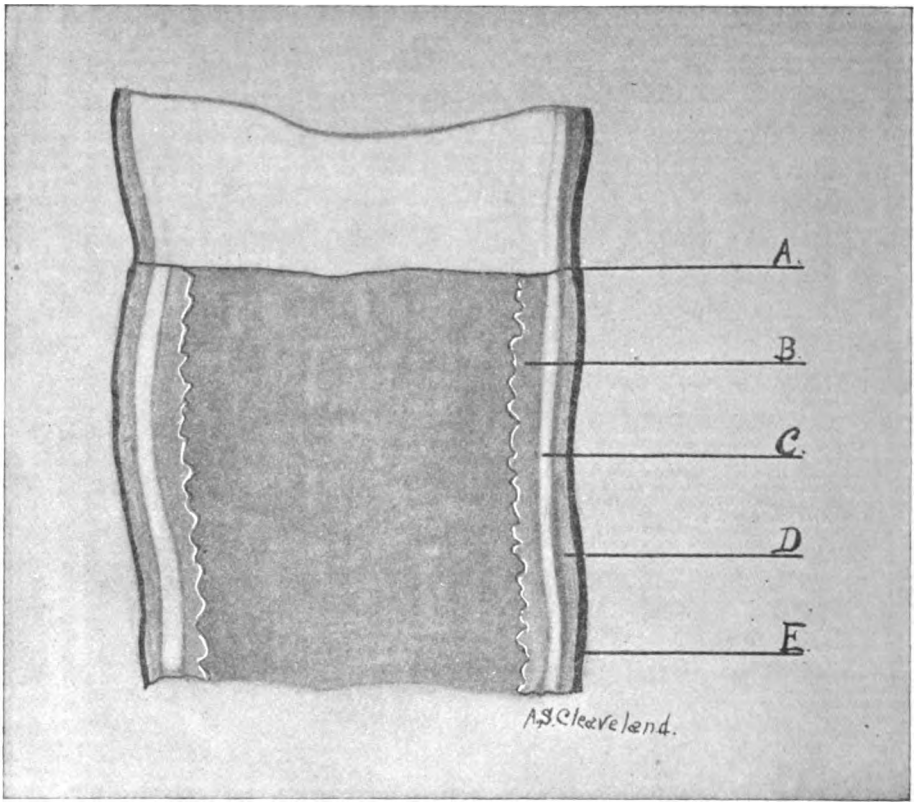

FIG. 8. *A.* Point of Ligation. *B.* Mucous Membrane. *C.* Submucous. *D.* Muscular. *E.* Serous.

them tearing through. The blood supply to the bowel must always be preserved at the mesenteric border.

The physical properties of the bowel; its contractility; its elasticity; its resiliency; its smooth, slippery surfaces; the eversion of the mucous membrane when it is cut, and its thin and pliable nature have always been recognized as difficulties in the way of rapid and safe enterorrhaphy. The danger of infection of the peritonæum occurring from the

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mucous membrane during the operation may have been exaggerated. Strict cleanliness is all that is required, and the field of operation should be washed off with salt solution before returning the bowel into the

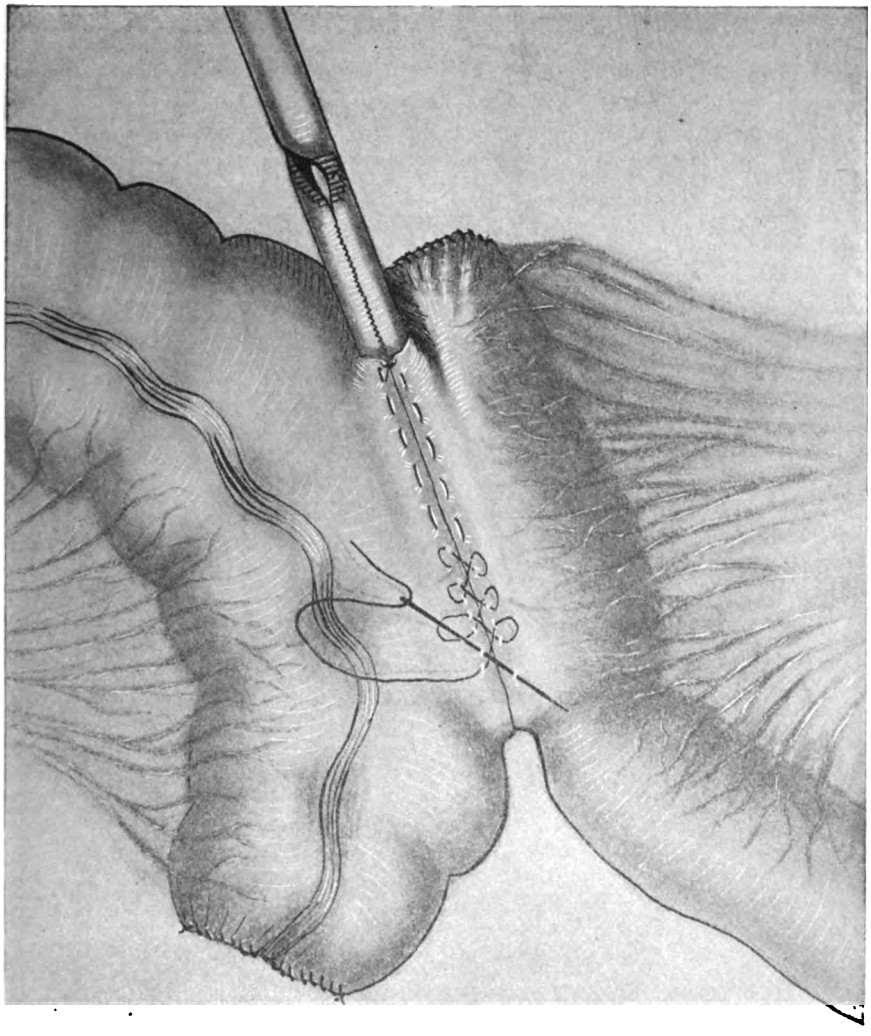

FIG. 9. Lateral Anastomosis of small to large bowel after excision of Cæcum.

abdominal cavity. The more carefully the intestinal contents are prevented from escaping, the less the danger to the patient. I feel more

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confident about the success of the case when there is no soiling of the peritonæum with intestinal contents at the time of the operation, even though it is thoroughly wiped and washed.

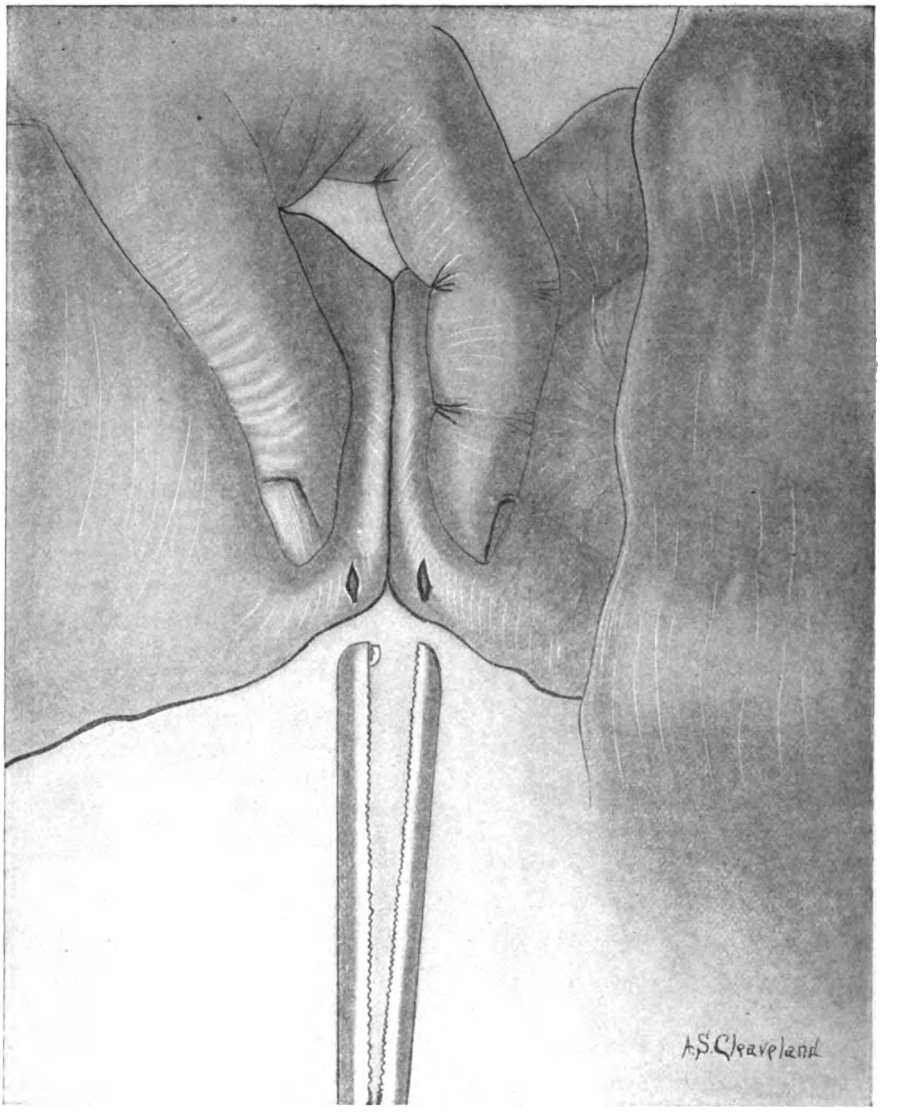

FIG. 10. Gastro-enterostomy.

For successful enterorrhaphy special attention should be paid to the following:

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I. Rapidity.—A surgeon who sews rapidly has a great advantage over his fellows in intestinal surgery who are not nimble-fingered.

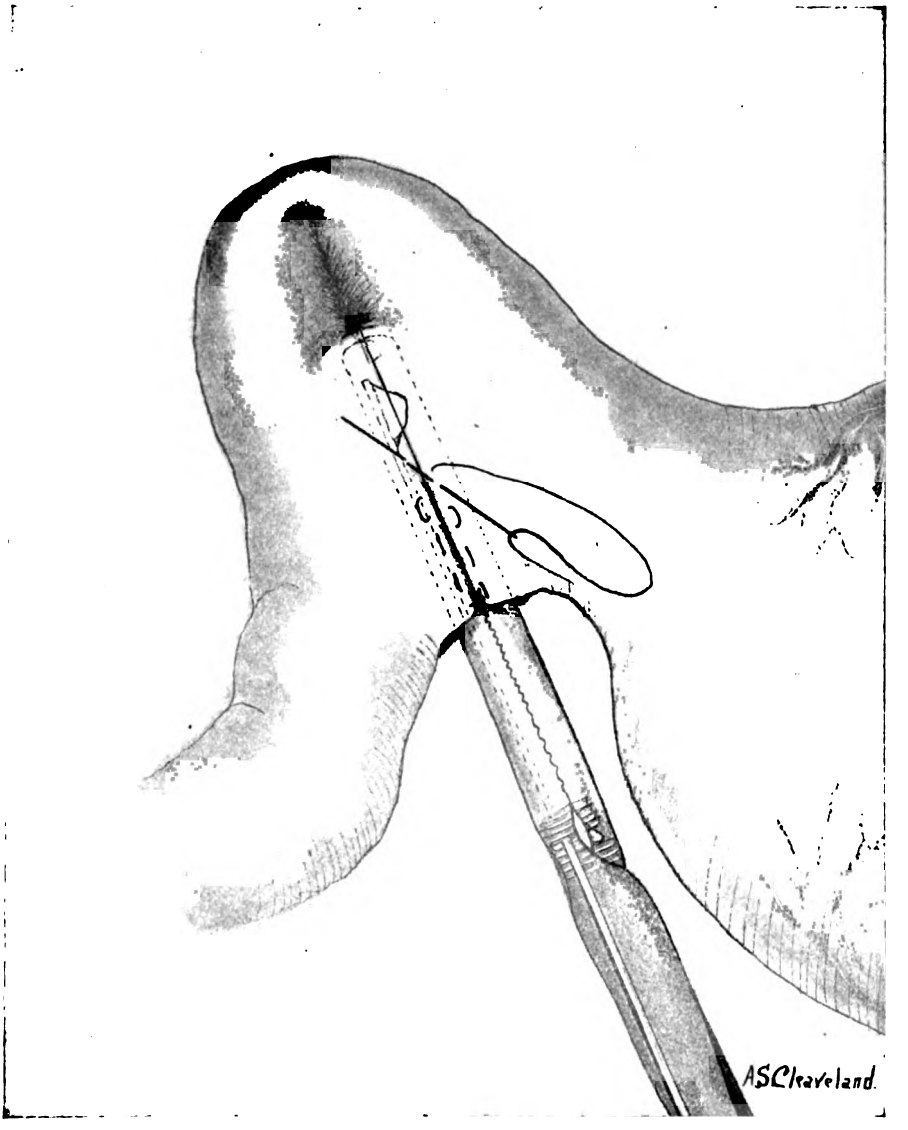

FIG. 11. Pyloroplasty. Ferguson's Continuous Suture.

Some people are naturally slow of movement, and it takes an enormous

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amount of practice for them to gain speed at an operation. One should acquire practice on dogs, but rapidity must not be gained at the expense of efficiency. The rapid operator must also be an accurate worker, in order to be eminently successful. It must be recognized that no small share of the success of the Murphy button and modifications of it has

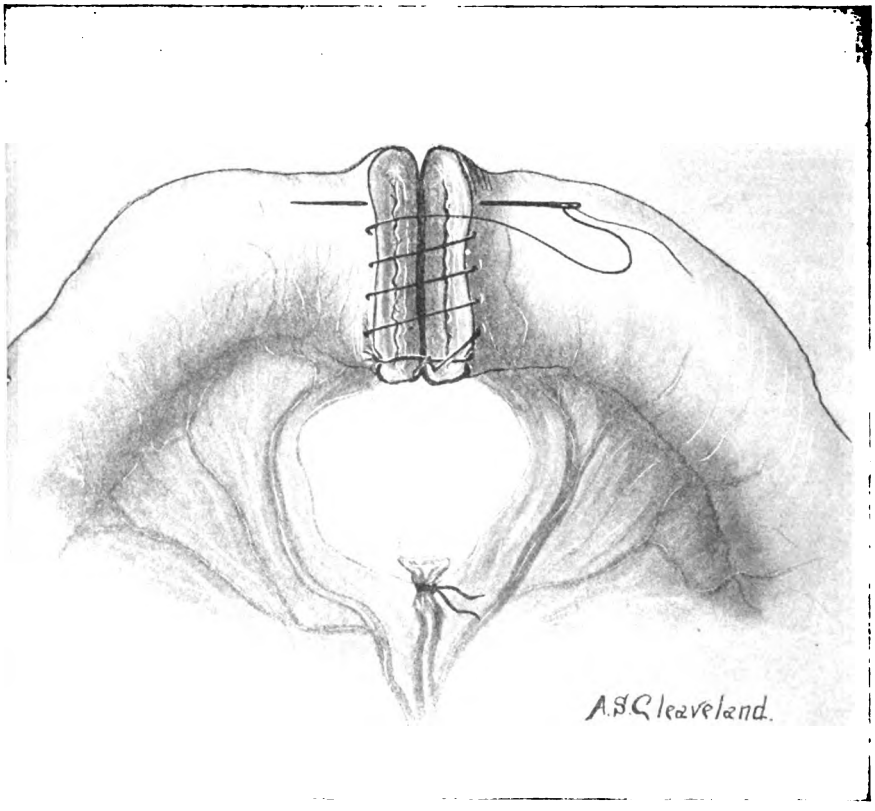

FIG. 12. End to End Anastomosis.

been due to (*a*) rapidity of its application, and (*b*) to the efficiency with which leakage is prevented.

II. Soiling of the Peritonæum.—This should be guarded against as much as possible. In spite of intestinal clamps or ligation of the bowel with gauze or rubber bands, a certain amount of soiling of the peritonæum is liable to occur while operating. The more the intestinal mucosa is severed, exposed and handled, the more extensively this soiling takes place. In order to prevent infection from this source, all the

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sewing possible should be done before the intestines are cut, and this is done in using this instrument.

III. Leakage.—Leakage between stitches usually happens within forty-eight hours. In order to insert stitches rapidly, accurately, and so efficiently as to prevent leakage, the bowel must be evenly and

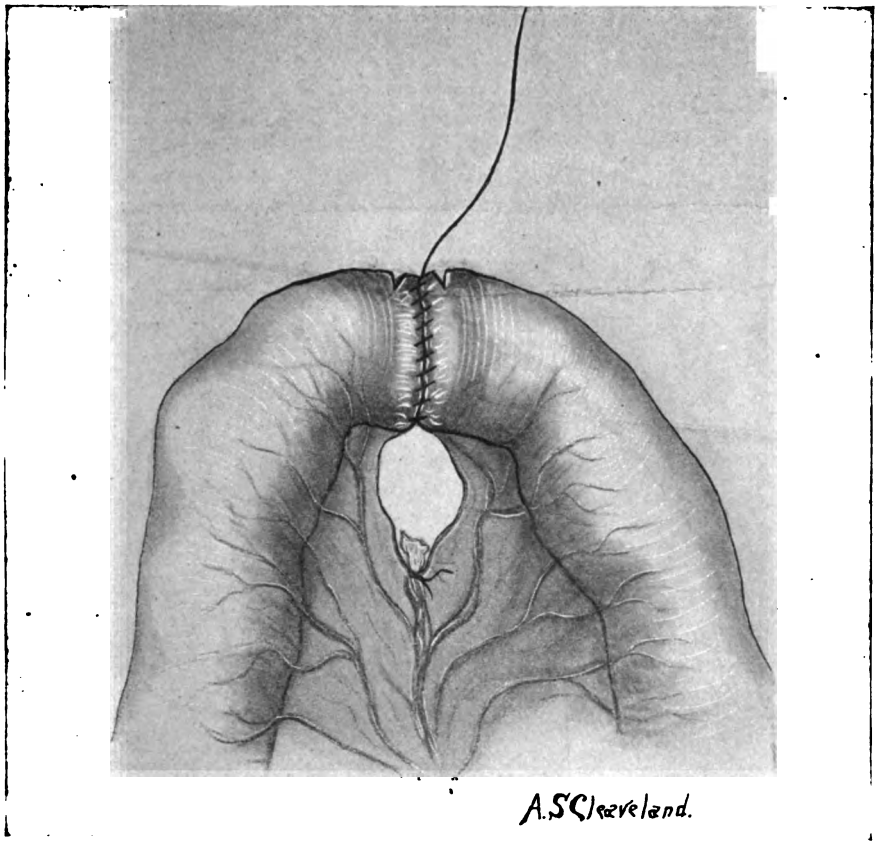

FIG. 13. End to End Anastomosis.

firmly held. Even when interlocking and cobbler stitches are selected, anything that holds the bowels evenly and steadily together is invaluable at an operation. It is readily acceded to that any instrument or appliance that facilitates suturing is gladly welcomed by the surgeon. Several of these have been devised and recommended. Dr. H. H Grant, of Louisville, Kentucky, in 1895 invented an enterotome for lateral anastomosis that has high merit. It is favorably commented on

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by Wyeth in his text-book on surgery. In principle it is constructed almost similar to my own. Dr. Laplace, of Philadelphia, invented forceps with rings at their end to grasp the cut bowels and hold them while the stitching is being made, and are then removed.

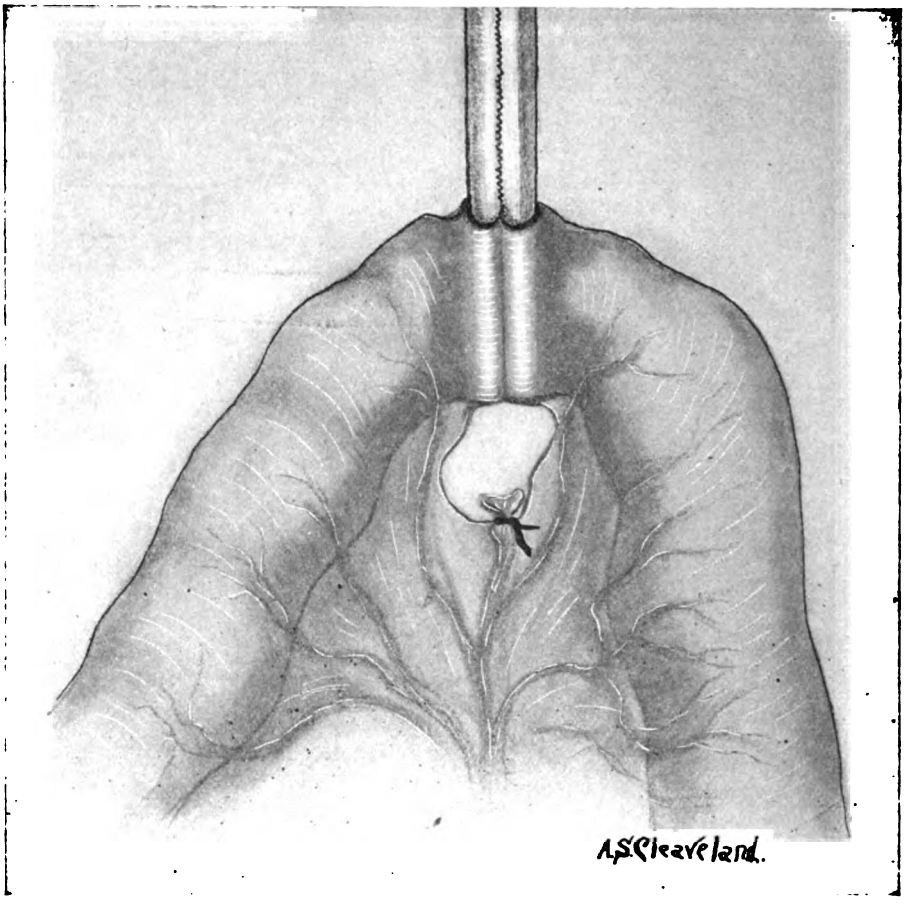

FIG. 14. End to End Anastomosis.

Similar ones in principle were discarded by me long before Laplace published his paper on anastomosis.

Dr. Halsted, of Johns Hopkins, has called our attention to inflatable rubber cylinders which he uses as an aid in suturing. Treves used rubber bags in 1882, and discarded them.

Bowel Clamps.—The bowel clamps (Fig. 1.) which I here present

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are devised to be applied on the bowel at either side of the field of operation for the purpose of preventing the escape of intestinal contents while operating. They are composed, as you see, of two blades, one of which is fenestrated, and both are covered with rubber, so that the pressure does not come directly on the bowel between the metal of the two blades, but comes on the rubber itself. This pressure is controlled by two screws, one at each end, which can be regulated to a nicety. They are so constructed that pressure can be applied more on one side than the other, according to the thickness of the bowel. They hold firmly and securely without the danger of damaging the intestinal walls.

Instrument.—The clamp and enterotome (Fig. 2.) which I now show you consists of three pieces, the two halves of the clamp, and a knife which slides in a groove between them when the instrument is closed.

Uses.—It is employed in extra-intestinal methods of suturing in end to end, lateral, or end to side anastomosis, simply as an aid while doing the sewing. It is easily and rapidly applied; it minimizes the chances of soiling the peritonæum with intestinal contents; it holds the bowels firmly and securely together, so that the most accurate stitches possible to be made can be quickly applied, thus greatly lessening the liability of leakage; it aids in completing the operation except the small hole through which the blades of the clamp entered; the stitches are inserted first, and the intestinal walls cut afterwards; the pressure of the clamp on the blood vessels of the mucous membrane for several minutes while sewing is being made lessens the tendency to hæmorrhage, and the new passage made between the bowels may be of any size deemed necessary, thus preventing any possibility of stricture forming. The enterotome clamp is recommended to all those surgeons who prefer extra-intestinal enterorrhaphy to other methods of anastomosis. Inasmuch as enterorrhaphy is an established procedure in surgery, anything that lends assistance to its expeditious and safe performance is desirable.

Operations.—The operations that may be safely performed with this aid are: (1) Lateral anastomosis. Apply the bowel clamps on either side; bring the intestines side by side, hold them with left hand, make a small puncture into each with a sharp, narrow-bladed knife; insert the blades of the enterotome clamp into these holes as far as desired; close the blades of the clamp, do the sewing—any kind of stitch you like—beginning at the proximal ends of the blades of the clamp on the upper surface; go around the end to the under-surface, then turn the under-side of the clamp uppermost, insert the knife between the blades and cut the two intestinal walls in the grasp of the instrument,

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remove the knife, open the blades gently, withdraw the instrument, continue the sewing to where it was begun, and the anastomosis is completed. (Fig. 3.)

If a section of bowel is removed, a lateral anastomosis of the small bowels can be done with the aid of the enterotome clamp (Fig. 7) more easily than an end to end, just close the ends of the bowels, and bring them together overlapping laterally. A rapid way of closing the end

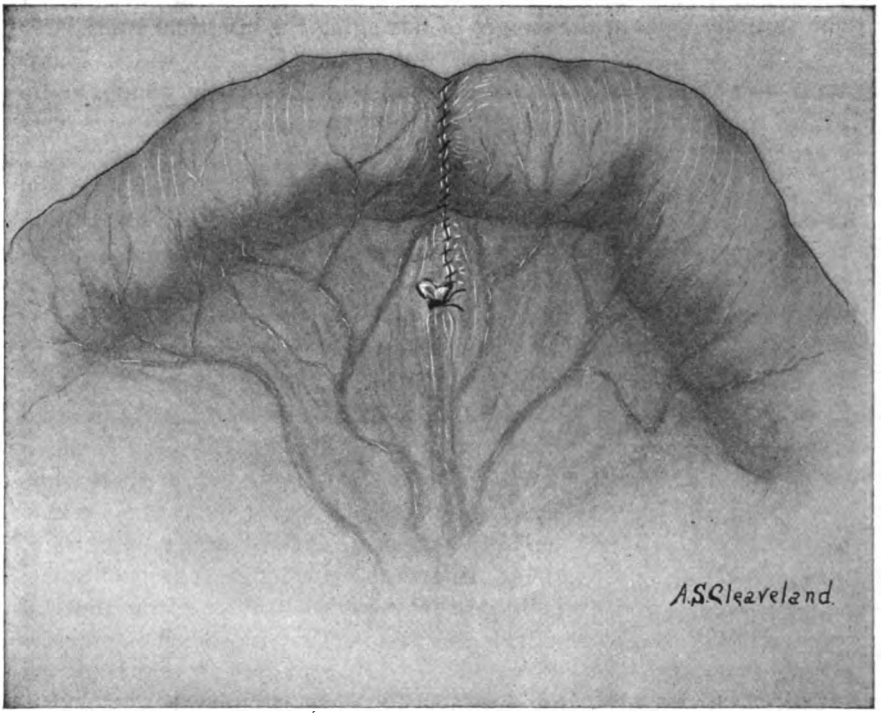

FIG. 15. End to End Anastomosis. Lambert Suture.

of the bowel is to tie it firmly with No. 1 chromoform catgut, which severs the mucosa as if cut by a knife (Fig 8); curette away the mucosa distal to the ligature and then it is safe to leave it without any further suturing being done where rapid work is specially indicated. This method is successful in the dog.

Inverting the ends of the bowel is, in my opinion, preferable to the simple ligature.

In cases demanding excision of the cæcum it is not practicable to

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make an end to end anastomosis with safety, and it is not absolutely necessary to perform an end to side anastomosis, but a lateral one is executed in its stead (Fig 9), with the help of the enterotome clamp.

Gastro-Enterostomy and Pyloroplasty.—These operations may be performed as represented in Figs 10 and 11, and one successful gastro-enterostomy was done by me by aid of the enterotome clamp on a man with cancer of the pylorus, but judging from a few dogs that die from hæmorrhage from the mucous membrane of the stomach in gastro-enterostomy with it, I should be chary in doing it again on the human unless it can be shown that a through and through cobbler, or other

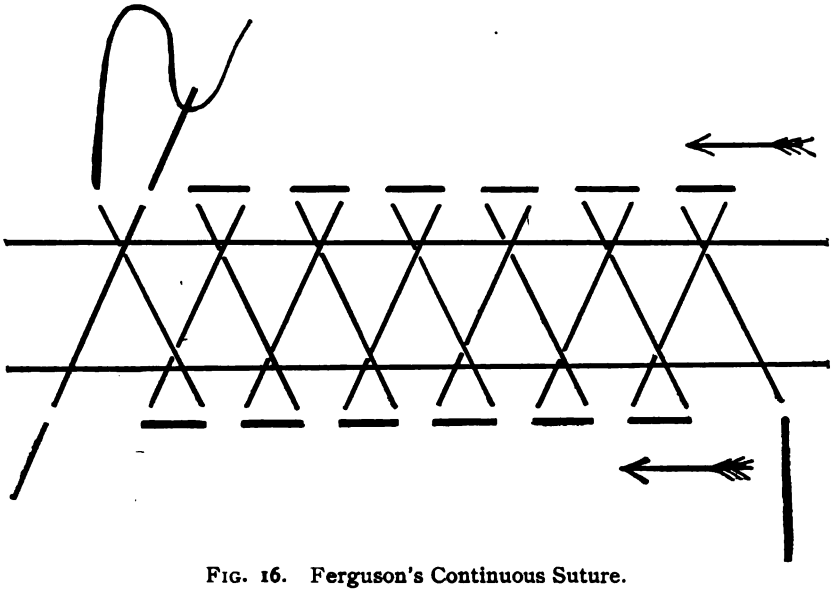

FIG. 16. Ferguson's Continuous Suture.

interlocking stitch is free from the danger of sepsis, then there would be no fear of hæmorrhage. In this direction further experimentation is commendable.

End to End Anastomosis.—To perform an end to end anastomosis with this instrument it is necessary to restore the continuity of the intestines temporarily, and then proceed to use the device. Bring the two cut ends of the bowel together laterally; unite all four walls by means of a continuous suture of catgut (Fig 12); straighten the bowel out, bringing the severed ends together; make a small incision into the bowel on each side of the continuous suture (Fig. 13) on the free side of the bowel; insert the instrument (Fig. 14); complete the suturing;

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No.	Operator.	Operation.	Suture used.	Date of operation.	Result.	Specimen No.	Post-Mortem.
1	Turck	Lateral anastomosis.	Turck lock-stitch.	Jan. 7, 1900.	Dog killed Jan. 22, 1900.	1	Union perfect; no sign of leakage, infection or necrosis. Few omental and mesenteric adhesions.
2	Trumbull.....	Lateral anastomosis.	Turck lock-stitch.	Jan. 9, 1900.	Dog died same day.	.....	
3	Trumbull.....	Gastro-enterostomy.	Turck lock-stitch.	Jan. 10, 1900.	Dog killed Jan. 22, 1900.	2	Union perfect. Opening small yet pervious. No sign of leakage or infection. Result perfect, as shown.
4	Andrews.....	Lateral anastomosis.	Cushing, right angle, continuous.	Jan. 17, 1900.	Dog killed Jan. 24, 1900.	3	Result perfect, as shown.
5	Lindley.....	Lateral anastomosis.	Turck lock-stitch.	Feb. 3, 1900.	Dog killed Feb. 15, 1900.		Perfect union and result.
6	J. G. Biller	Lateral anastomosis.	Turck lock-stitch.	Feb. 5, 1900.	Dog killed Feb. 13, 1900.	4	Union perfect. No entrance of leakage, necrosis or infection.
7	Biller..... ...	Gastro-enterostomy.	Cushing suture.	Feb. 5, 1900.	Dog killed Feb. 13, 1900.	5	Result excellent, as shown.
8	Biller.....	Lateral anastomosis.	Lembert suture.	Feb. 7, 1900.	Dog died Feb. 10, 1900.		General peritonæal infection; leakage between sutures.
9	Biller.....	Lateral anastomosis between colon and ileum.	Cushing suture.	Feb. 7, 1900.	Dog killed Feb. 13, 1900.		Splendid union, without infection.
10	Biller.....	Gastro-enterostomy.	Halsted suture.	Feb. 8, 1900.	Dog died Feb. 11, 1900.		General peritonæal infection from leakage anteriorly.

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11	Ferguson.....	Lateral anastomosis.	Cushing suture.	Feb. 14, 1900.	2d operation, Feb. 16 and pus removed.		Result excellent; plastic union.
12	Bristow.....	End to end suturing. Previous operation No. 11.	Halsted suture.	Feb. 16, 1900.	Dog died Feb. 19, 1900.		Post-mortem not made.
13	Harris.....	Lateral anastomosis.	Cushing suture.	Feb. 17, 1900.	Dog killed Feb. 24, 1900.	6	Result perfect, as shown.
14	Harris.....	Lateral anastomosis.	Cushing suture.	Feb. 19, 1900.	Dog killed Mar. 5, 1900.	7	Result perfect.
15	Gilmore.....	Lateral anastomosis.	Cushing suture.	Feb. 23, 1900.	March 5, 1900, killed.	8	Specimen, as shown, perfect.
16	Steele.....	Lateral anastomosis, and end to end by Murphy button. 2 operations.	Cushing suture.	Feb. 24, 1900.	Dog killed Mar. 13, 1900.		Splendid result in both cases.
17	Giere.....	Lateral anastomosis.	Cushing suture.	Feb. 24, 1900.	Dog killed Mar. 2, 1900.	9	Result excellent, as shown.
18	Steele.....	Lateral anastomosis and Gastro-enterostomy with Murphy button.	Cushing suture.	Feb. 26, 1900.	Dog killed Mar. 18, 1900.		Button from gastro-enterostomy would not pass point of lateral anastomosis, causing obstruction. Mass of fæcal matter above anastomosis had nearly forced through line of suturing. Adhesions, however, prevented infection thus far.
19	Gilmore.....	Gastro-enterostomy.	Cushing suture.	Feb. 26, 1900.	March 1, 1900, dog died.		Hæmorrhage from gastric mucous membrane.
20	Steele.....	Lateral anastomosis.	Turck lock-stitch.	March 8, 1900.	March 18, 1900.	10	Perfect specimen, as shown.

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No.	Operator.	Operation.	Suture used.	Date of operation.	Result.	Specimen No.	Post-Mortem.
21	Backus	Lateral anastomosis.	Cushing suture.	March 9, 1900.	Dog died from shock at conclusion of operation.		Shock same day.
22	H. C. Crowell	Lateral anastomosis.	Ferguson's continuous.	March 9, 1900.	Dog living Mar. 29, 1900.		
23	Ferguson	Lateral anastomosis.	Ferguson's continuous.	March 9, 1900.	Dog living Mar. 29, 1900.		
24	Backus	Lateral anastomosis.	Cushing suture.	March 21, 1900.	Dog living Mar. 29, 1900.		
25	Gilmore.	Lateral anastomosis.	Cushing suture.	March 21, 1900.	Dog living Mar. 29, 1900.		

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cut the continuous suture with the knife; remove the blades, close the small hole, and the end to end anastomosis is performed (Fig. 15).

While I do not think that this is the best method at our command for an end to end anastomosis, still I am convinced that of the extra-intestinal methods of end to end enterorrhaphy this is the best. In dealing with the large bowel in man when an end to end is necessary, I am at present inclined to continue to use two rows of sutures. I have been so successful with the Czerny-Lembert method that I should hesitate to do anything else except in some rare instances where suturing could not be done, but it was quite easy to use a Murphy button.

Let me now present to you a continuous suture which I call a "half-back continuous suture." (Fig. 16.) The advantage of using it in preference to other forms of continuous sutures is that there is less liability for the stitches to loosen while being used, and is therefore safer.

Experiments.—In conclusion, allow me to draw your attention to experiments. Some six months ago I requested Dr. R. C. Turck, Professor of Anatomy and Operative Surgery, Post-Graduate Medical School, to try my method, and to get his classes in experimental work to perform intestinal operations with the aid of my enterotome clamp. The following is submitted by him:

With the exception of four operations, Nos. 1, 11, 22 and 23, the above were performed by men who had never done intestinal enterorrhaphy. The result here shown with the enterotome clamp under these conditions is excellent. There were six deaths: Two died from shock (Nos. 2 and 21); two died from leakage, and one died on third day (no post-mortem), which was most likely due to leakage; No. 19, gastro-enterostomy, died of hæmorrhage from gastric mucous membrane. This only includes two of my own experiments. What I wish to show is that the enterotome clamp must be an aid in enterorrhaphy when in the hands of the inexperienced the results are surprisingly good, as demonstrated by the above record.

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THE PRINCIPLES AND THE MOST RATIONAL, INNOCENT AND EFFECTIVE METHODS IN THE TREATMENT OF PATHOLOGIC RETROVERSIONS AND RETROVERSIO-FLEXIONS OF THE UTERUS.*

By A. Goldspohn, M.D.,

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Principles.

I. Although these displacements invite disorders of a more serious nature than they themselves represent, they do not cause death. And while they do embarrass conception and gestation, they do not interfere with the crowning act of reproduction, *i. e.*, labor itself. Therefore, all surgical or other measures that are chosen for their correction must not have any pronounced rate of mortality, must not create conditions which may disturb normal gestation or obstruct natural labor and they must not disarrange the normal anatomy or disturb the functions of other equally important organs.

II. Surgical procedures for this purpose that have not been proven to stand the test of pregnancy in *both directions, viz.*, that they do not embarrass gestation or labor and also do not permit a recurrence of the displacement of the organs after labor, are likely to be mere temporary relief measures, not entitled to the dignity of curative procedures and should be very guardedly made use of in women who retain a probable capacity for reproduction.

III. A variable degree of antagonism exists, in principle and practically, between the effects of the various "fixation" and "suspension" operations of the uterus and the interests of the uterus in gestation and labor. There is no parallelism of interest between them. The more durable the fixation is made in order to guard against the recurrence of the displacement of the uterus, the more is it entrammelled in pregnancy and labor; and the more these vicious conditions are guarded

*Read. For *Discussion*, see page 144.

The terms "retro-displacement" and "retro-deviation" of the uterus should be avoided, because they do not refer to the inclination of the long uterine axis at all, and may be applied to retroponation or retraction of the normally anteverted uterus.

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against in the technic of the operation, the more regularly does the displacement recur after labor and frequently even without it. The fixation operations cannot serve both purposes.

IV. It is not in the power of any operator to determine or control fully the degree of fixation or the size or strength of the bands that he aims to construct, because (*a*) of the impossibility to always exclude slight infections notably on the sutures, which are then followed by an unexpected amount of exudation and connective tissue formation; (*b*) because the sutures as foreign bodies do not excite the same degree of reaction in all subjects; (*c*) because of the uncertain amount of interference with the circulation, that is exercised by the sutures. Thus the writer in a vaginal hysterectomy once met two very firm fibrous bands, thicker than lead-pencils, extending from the fundus uteri to the lower abdominal wall, that had arisen from a couple of seroso-serous stitches that had been made two years previously with a milliner needle and finest silk to supplement an intra-abdominal shortening of round ligaments in a case that presented no temperature nor local signs of infection after operation.

V. It is impossible to construct any new physiological ligaments for the uterus by artificial means. The bands which result from stitching the urachus to the uterus, or from attaching the utero-ovarian ligaments to the abdominal wall, or from passing a strip of parietal peritonæum through a slit in the fundus uteri (F. H. Martin) or from the pulling out of a purely peritonæal parietal ventrofixation (Kelly), etc., stand merely on a level with similar bands resulting unintentionally from pathological processes. Nor can such bands be made to partake of the nature of a true ligament by weaving striated muscular fiber from a rectus abdominis muscle into them (Boveé), which can not become—like the round ligaments—a part of the non-striated muscle of the uterus, to undergo evolution and involution with it. All such bands or cords do not grow, but simply become stretched during gestation and have no capacity to retract and to continue their intended service afterward.

VI. The round ligaments of the uterus being an integral part of its muscular apparatus, are the only available structures for the purpose here intended, that grow with it physiologically during gestation and become involuted with it normally after labor. And while from the course that they pursue their action in maintaining the uterus in anteversion may be doubted in some instances, nevertheless, *they are always present* and, supplemented by a little adherent peritonæum, they can practically always be developed surgically in sufficient strength so that

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when their thicker proximal halves only are used and are given a more favorable forward anchorage to the posterior surface of Poupart's ligaments, they become exceedingly serviceable, in the absence of certain specific contraindications, to stand the crucial test of pregnancy in both directions, *i. e.*, to hold the uterus anteverted permanently.

VII. Pessaries and surgical devices, such as suspending the uterus by ab absorbable thread (C. A. L. Reed) or passing a catgut purse-string suture subperitoneally along the course of the round ligaments, the anterior surface of the uterus and the interior of the abdominal wall (C. E. Ruth[2]) *i. e.*, temporary supports of the uterus which aim to cure by inviting retraction of the elongated round ligaments, can, as a rule, be successful only if undertaken during the post-puerperal period when involution of the uterus and round ligaments is in progress, and only exceptionally at other times. For this reason all women in the puerperal state should not only lie approximately in a Sims' position at least half of the time, alternating from side to side, but they should also be reviewed soon after getting up, with reference to retroversion and arrested or delayed involution of the uterus. When found in this condition, which is often the case, it should be treated by massage, weaned into anteversion by the same effort repeated about once a week, and supported in this position constantly during the intervals by a pessary that does not make itself felt. As soon as the excessive weight of the uterus has disappeared (which is greatly facilitated where needed by intra-uterine applications of Tinct. iodine) and as soon as intra-abdominal pressure holds it anteverted most of the time, monthly reviews by the attendant are sufficient; and in from six to twelve months of such care, during this period of grace for the round ligaments, it will be found that the pessary can be dispensed with in most cases without a return of the displacement, which will be the case only exceptionally (about 3 per cent.) when the same treatment is pursued outside of this "period of grace."

VIII. All the various methods of shortening the round ligaments that have been made use of for the cure of retroversion of the uterus are innocent of harmful effects upon its reproductive functions. But the distorting methods of loop formation by which alone these ligaments can be shortened by vaginal or by ventral celiotomy, depend upon the uncertain tenure of sutures and adhesions; they interfere with the physiological evolution and involution of the ligaments in case of pregnancy and do *generally not* prevent a recurrence of the displacement after labor. Shortening of these ligaments by way of the inguinal canals, their natural channels, when properly done, is the only

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operation that has been proven to stand the double test of pregnancy; while, at the same time, it does not interfere with the anatomy nor the function of any organ and does not establish a new thorn in the flesh in the form of persistent or ever recurring pain from traction on peritoneal structures.

IX. In the majority of all infections of the internal female generative organs, the infecting agents do not continue to exist in an active state, indefinitely, but die out after causing the organs to become adherent, and leave no foci or accumulations of really infectious material in or about these organs. Such adhesions of these organs are commonly liberated by the best operators through small ventral or vaginal incisions, exclusively by touch without sight. And this can be done equally well through the dilated internal inguinal rings, through which the adnexæ can then be easily drawn out and the most ideal conservative operations performed upon them and, therefore, also the best attainable degree of health obtained for the patient with greater facility than by any other route.

X. The aggregate subjective and anatomical evils that arise from pathologic displacements of this kind are only in part due to the retroversion of the uterus and are largely due to the associated or consequent descensus of its adnexæ; and permanent restoration to a more auspicious position, if needed at all, is needed as much by the latter as by the former. And while in the majority of instances the moderate discensus of the ovaries is sufficiently overcome by restoring the uterus to thorough anteversion, in the other cases it must be achieved, if they are to become or to remain well, by shortening the lateral true suspensory ligament of the ovary. This requires an access to the lateral wall of the pelvis such as is obtained by a good-sized median ventral incision, or through the dilated internal inguinal ring immediately in front of the parts, through which the relaxed ligamentum infinidibulopelvicum is easily drawn out and looped upon itself; but it is *not possible* by any of the vaginal routes which are very serviceable for extirpation but not for conservative surgery upon the adnexæ.

Methods of Treatment.

I. Medicinal Means.—These are applicable to both sterile and fruitful women alike when the local conditions suitable for it exist. Movable retroverted uteri that are not complicated by adhesions or other diseases of adnexæ, and still make symptoms, should be restored to normal position by bimanual palpation and manipulation—not by the

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use of any kind of sound or intra-uterine repositor nor by a pessary, either—and after they have been so restored by intelligent hands they should be retained in anteversion by a suitable pessary so fitted that it is not noticeable to the patient. To this category can be added cases that are complicated by adhesions that are limited mostly to the uterus without disease or firm fixation of adnexæ particularly in descensus. These can be liberated and replaced by massage, which should be done every third or fourth day and followed by a generous ichthyol and glycerine tamponing rationally applied, to be retained for forty-eight to sixty hours and followed by large hot douches in the dorsal position twice daily. Cases in which the fixations predominate in or upon the adnexæ, particularly where the ovaries are soldered down, are not so amenable to massage even if the uterus is free; because of their much smaller size and far more delicate structure than the uterus, it is easier to do harm to the ovaries than to detach them by this mechanical treatment. And an ovary that, on account of its relaxed supports, does not ascend with the fundus uteri when the uterus is restored to anteversion, or that cannot do so because it is fixed in descensus, will generally forbid the use of a pessary. With the exception of these cases and others in which serious destructive disease or neoplasms in the appendages make an abdominal section unavoidable, a large proportion of patients with these displacements can be restored by these means to very good health *provided,* that, for from one to three years, they will go to a doctor who understands bimanual palpation and the *correct use* of pessaries, every one to two months for revision and readjustment; and, *provided,* furthermore, that they will use cleansing hot vaginal douches preferably of strong salt water or with a more potent antiseptic when required, in the dorsal position once or twice daily all the time except during menstruation. Tedious and tiresome as all this may be, the majority, especially of women who have a capacity for conception, had better be treated in this manner if among surgical measures nothing better awaits them than some flimsy seroso-serous fixation or suspension of the uterus that serves frequently as a makeshift only until the next labor, or a more lasting fixation of the uterus to the vagina or to the abdominal wall that can convert the next labor into a horror!

II. Surgical Treatment.—In this it is of prime importance to make a clear distinction between females who retain no probable capacity for conception and those who do. Sime surgical procedures, such as a firm and direct fixation of the fundus to the vagina or to the ab-

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dominal wall, may be very suitable in the former class, but should be totally avoided in the latter.

1. *In Women with Whom Future Pregnancy is out of the Question,* the surgical measures for correcting or preventing a retroversion of the uterus will resolve themselves mostly into auxiliaries to operations for other more formidable disorders. Thus when the appendages are wholly removed and the uterus is retained, which the writer, for conservative reasons, deems best in about one-half of all such cases, the uterus should be secured against the possibility of falling backward, when operating by the ventral route, preferably by intra-abdominal shortening of the round ligaments, or by a ventrofixation or a ventrosuspension if preferred. And when operating by vaginal celiotomy, the same object should be cared for by a vaginofixation. This is preëminently the operation of election in cases of elderly women with genuine prolapse of the uterus and not merely an elongation of the supravaginal cervix. Many of such cases will not be permanently cured by the best of plastiques upon the vagina and the pelvic floor alone. But these operations can readily be preceded in the same sitting by an anterior median vaginal cœliotomy by which the internal organs can receive all needed attention and the fundus and body of the uterus can be attached permanently to the vagina high up, by a serosofibrous or fibrofibrous junction and a durable result obtained by comparatively light and conservative procedures.

But there are a relatively small number of women, near the menopause, with retroversions complicated with adherent and very painful or diseased adnexæ, that are served best by an anterior vaginal celiotomy followed by shortening of the round ligaments or a vaginal fixation of the fundus as the operator may choose.

2. *Surgical Measures for pathologic Retroversions and Retroversioflexions in Women who have a probable Capacity for Reproduction.* —Among this large class of women there is comprised a relatively small number of cases in which the displacement clearly makes symptoms, although the uterus and appendages both are free and no pronounced degeneration or disease exists in either of them, aside from a moderate endometritis which, however, disappears spontaneously when the displacement is corrected for a longer period of time, and constantly recurs with any other treatment when the displacement is not corrected. Most of these cases need no surgical treatment but enjoy good health by wearing a pessary periodically with the care above mentioned. They are the few with which the simple Alexander operation—as a mere competitor of the pessary—has been able to cope successfully.

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But opposite to these simple cases, in the other extreme, are a larger number of cases of retroversion associated with destruction of the adnexæ of one side by neoplasms or by infections that are still active or that have formed dangerous fluid accumulations which require a generous access and the guidance of the eye in addition to that of touch to deal with them successfully—while enough can probably be saved or reconstructed of the adnexæ of the opposite side to continue the reproductive functions. In these cases median ventral celiotomy is the safest course and gives the best chance for doing the most nearly ideal conservative work for the patient. In such cases, after removing from the appendages what is destroyed and securing the most auspicious condition for the remainder, the writer usually corrects the displacement of the uterus by doubling each round ligament upon itself in such a manner as to make its outer half three-ply. This is done by drawing it up in a loop by a forceps caught upon it about midway between the uterus and the abdominal wall, then uniting the two sides of this loop with fine silk to a point as low down as possible, and finally the apex of the united loop is turned over and stitched to the peritonæum and the ligament at the point of its entrance to the abdominal wall. But, on account of the greatly superior serviceability of round ligaments shortened by way of the inguinal canal, Kellog,[1] Edebohls,[2] R. Abbe[3] and F. W. Johnson[4] have made two additional incisions for that purpose in these cases. The majority of operators, however, would do some form of mediate ventrofixation (suspension) which, under these conditions, is an excusable procedure. But the writer never has performed it where some form of shortening of the round ligaments was available, and never would hitch the uterus to the abdominal wall by any kind of a band in the much larger number of cases that do not absolutely require such a ventral incision and ocular inspection for other reasons—because (*a*) ventrosuspension, while it usually does not create obstetric complication, it nevertheless partakes of the irrational and unnatural qualities and inherent antagonism to nature that are the chief chracteristics of the entire genus of fixation procedures to both the vagina and to the abdominal wall. And (*b*) because these so-called "new ligaments" occasionally cause intestinal obstruction. Thus Ruch,[5] Jacobs,[6] Olshausen,[7] and A. L. Smith,[8] each have published a case, and Rufus B. Hall[9] of Cincinnati has dealt with three cases and in a recent letter he informs me of another death from ileus due to the suspension band that occurred in his knowledge, but in the hands of others. And Fritsch[10] (Bonn) did a ventrofixation by Olshausen's method of attaching not the uterus but the origins of the

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round ligaments to the abdominal wall—which is the most innocent of the original German methods—and later on he had to do a second abdominal section to relieve the patient, who could not stand straight or walk. He found the omentum incarcerated in the cleft between the fundus uteri and abdominal wall and had to resect much of it.

But intermediate between the lightest and the severest grades of these affection is the most numerous class of all still to be provided for—those cases of retroversion in which infection has run its course and has died out, leaving more or less extensive adhesions and fixations of the organs with degenerate conditions in the adnexæ but without leaving septic or purulent accumulations. In these cases the writer formerly applied massage extensively, together with other well-known medical means, to liberate the organs and to prepare them either for a protracted and sometimes endless use of a pessary, or for the simple Alexander operation. Cases that could not be completely liberated by these means were freed with a finger introduced into the small pelvis through an opening in the posterior vaginal wall, immediately preceding the Alexander operation. But this gave no opportunity for relieving the appendages of degenerate conditions or particles aside from the fixations, and, therefore, not so good a grade of general average health was obtained by at least seventy-five cases of the simple Alexander operation, as has later been obtained by the writer's addition of bilateral inguinal celiotomy to the Alexander operation as performed by Edebohls and by himself up to September, 1893. He discovered at that time that the results of a tedious, laborious and painful course of massage could in every instance be much more completely obtained in a few minutes by an index finger, usually, introduced through the easily dilated internal inguinal ring of each side after the inguinal canal has been opened. He found that the tubes and ovaries so liberated could be drawn out here, without traumatism, and trimmed by surgical procedures that are conservative in the highest degree, that they could be restored from descensus to an approximately normal position by shortening their common lateral suspensory ligament or that they could be removed by the same apertures, if exceptionally required. And it has become very clear that the simple Alexander operation without such interperitonæal work is generally too imperfect and imbecile a procedure because it does not cover these paramount indications and because it cannot secure a sufficient or an effectual shortening of the round ligaments in many simple cases even of movable retroversions, for in many such cases the round ligament is so engaged within the broad ligament, that after any amount of

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dissection and traction upon it extra-abdominally, it continues to pull from the middle or the lateral portion even of the broad ligament instead of from the uterus. This fact accounts for some of the recurrences of displacement in cases of the simple Alexander operation and can not be known nor corrected unless a finger be introduced into the abdomen.

The technic of this *bilateral inguinal cœliotomy and shortening of the round ligaments via the dilated internal inguinal rings* has been stated in detail elsewhere[12] and may be summarized as follows: an incision five to seven cm. long, beginning at the pubic spine and extending parallel with Poupart's ligament and one cm. above it, is made through the skin and fat only. No other cutting is done unless occasionally a few crossing fibers at the outer acute angle of the external ring are severed in order to start the blunt cleavage of the important aponeurosis of the external abdominal oblique muscle by fingers. The inguinal canal now being open, the round ligament is traced from a little bunch of fat caught in an artery forceps in the external ring before splitting the aponeurosis. To do this, as the most valuable guide to a ready finding of the ligament, the external ring should always be laid bare carefully first. From the posterior wall of the open canal the round ligament is readily drawn out by crowding back the loosely attached internal oblique and transversalis muscles with gauze sponges, and the peritonæal envelope appears in the form of a whitish tent drawn out upon the ligament. This it is best to nick with scissors to obtain clear cut edges, which are caught in artery forceps. Through this opening, after—and frequently without previous stretching with a long forceps—an index finger is introduced and passed over the entire posterior surface of the uterus and from the proximal cornu along the tube or along the utero-ovarian ligament to the ovary. These parts are more frequently adherent than the uterus itself, but are easily liberated and then drawn out for inspection. (In fat subjects only upon the plain of the aponeurosis at the bottom of the fat wound, which is then made a little longer.) And when required, the ovary is resected or a salpingastomy is made or the suspensory ligament of both, when it is elongated so that it can be drawn out of the wound, is doubled and stitched upon itself or occasionally the tube and ovary of one side are tied off and removed. In case the uterus is firmly adherent, especially if so to organs that are themselves movable, like the omentum, it is prevented from dodging or escaping the finger in the abdomen by steadying the cervix by means of two fingers of the other hand in the vagina and, in extreme cases, by a thick dilating

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sound introduced into the uterus, whose cervix, in such cases, has always been dilated and its cavity curetted as the first act. The round ligament is always carefully liberated from the broad ligament along with a supplementary strip of adherent peritonæum, until it distinctly pulls from the fundus uteri and it is anchored in the second tier of sutures to the posterior surface of Poupart's ligament that has been everted for that purpose by means of a forceps. The wound is closed à la Bassini, with four tiers of sutures, three of catgut being buried. The first one in form of a purse-string closes the peritonæum and internal ring. The second brings down two or three good bundles from the internal oblique and transversalis muscles and unites them to the outer half of Poupart's ligament, in front of the closed internal ring and laterally from the round ligament, to guard against hernia. By from three to five similar and successively inward stitches in this layer, the round ligament is carefully imbedded between a roll of elastic muscle tissue and Poupart's ligament; so that its circulation will not be cut off; it receives a safe anchorage and the inguinal canal is solidly closed along its entire length. In the third tier the split edges of the aponeurosis are carefully reunited throughout, and in the fourth tier the outer wound is closed by interrupted silkworm gut or celluloid thread sutures, without drainage.

From the 18th of September, 1893, to the 16th of March, 1900, the writer has performed this operation in 106 cases, always, except in two cases, in conjunction with one or several auxiliary operations, as curettement, cervix operation, posterior colporrhaphy and perineorrhaphy—in some ten cases for a complete tear into the rectum—or removal of hæmorrhoids by the cautery. There has been no death due to the operation as such. One patient that should not have been anæsthetized died on account of a kidney complication that was not discovered owing to an unfortunate mistake in the examination of the urine. A pus-tube was enucleated and removed from one side in three cases. Both tubercular tubes containing cheesy pus were removed in one case and an early unruptured tubal pregnancy in another, all in violation of the writer's general plan, and owing to errors in diagnosis. None of these ruptured during extirpation; otherwise median ventral celiotomy would have been done immediately, and convalescence was not materially disturbed in any of them.

Nine months ago the writer made a careful review as to the present status of forty-nine cases operated upon at times that averaged eighteen months previous to that time. And he is personally informed as to

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the present status of at least twenty-five cases more. In all these together *retroversion has not occurred in a single case,* and *no fully developed hernia has supervened.* One hard-working woman has a weak spot—an impending hernia—on one side and ascribes it, probably correctly, to sliding down a slippery stairway upon her buttocks, five weeks after the operation, when she felt something "give way" there. But incidentally, a few developed and more impending inguinal herniæ and one femoral hernia have been cured by the operation.

Eight cases of pregnancy are known to have followed. Two of these confessed to having an abortion procured upon themselves, and the remaining six went to and through labor normally, and have each of them a normally anteverted and involuted uterus, as the writer knows from examining all but one of them himself. It is germane to state here that in Stocker's[13] observation eight cases were available for examination after passing through a normal pregnancy and labor—some of them twice—after an ordinary Alexander operation, and in each case the uterus was found in normal position; finally Edebohls[14] examined seven cases which had been treated by this operation and had subsequently passed through one and some of them two normal pregnancies and labors, and found the uterus anteverted. Burrage[15] observed a total of twelve pregnancies in seventy-one cases of Alexander operation. Two of these had a defective primary result of the operation when they left the hospital, such as one ligament torn off at time of operation in one case and the other no good result at the time for some other reason. These two and one other that had an adherent placenta and a severe septic process to endure during the puerperal state were, for these very sufficient reasons, found to have a recurrence of their displacements after labor; but the nine cases which had fairly normal primary results of operation uniformly passed the double test of pregnancy successfully. Thus we have twenty-nine successful cases that have stood this crucial test and no failures that can be honestly counted. This fairly established the writer's postulate that shortening the round ligaments via the inguinal canals, if thoroughly done, is so far the only operation that has been proven not only not to hinder gestation and labor, but also not to permit a recurrence of the displacement afterwards; because such comparatively uniform good ultimate results have not been shown nor can they be shown by the advocates of any other operation, nor have they all of them aimed so high or expected as much.

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TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, March 21st, 1900.

The *President,* T. J. WATKINS, M.D., in the Chair.

Clamp for Utero-Rectal Anastomosis.

Dr. FRANKLIN H. MARTIN: I have an instrument to exhibit which is still in the experimental stage. It is a clamp for accomplishing uretero-rectal anastomosis. The object of the instrument is to facilitate the operation by shortening the time of the procedure, to guard against leakage at the mucous membrane of the bowel without, at the

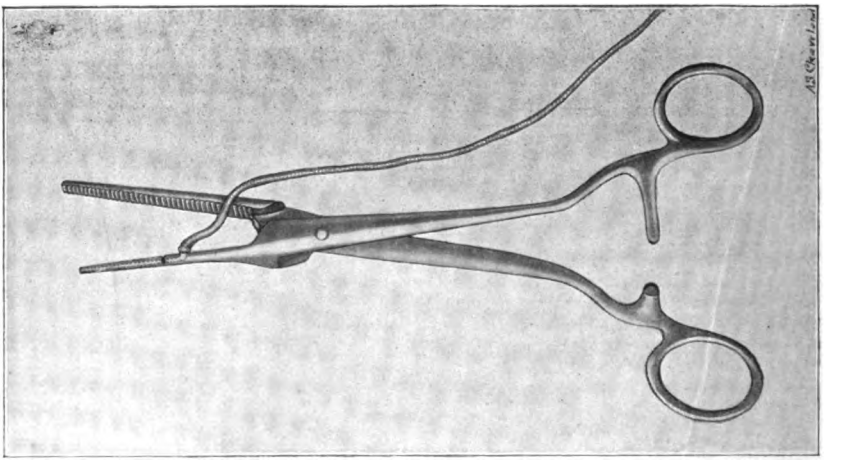

Fig. 1.

same time, getting constriction of the ureter to provide for a free flow of urine, to guard against the possibility of occluding the ureter by thoroughness of suturing, otherwise necessary, and to provide for adequate burying of the ureter. The application of the instrument is easily understood, but rather difficult to explain. The bowel prepared, as I have described heretofore, for ureterorectal anastomo-

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sis by denuding it of the serous and a portion of the muscular coats. (See illustrations.) A small opening is then made through this oval-shaped denudation, which denudation is about two inches in length on the lateral wall of the rectum, sufficiently large to admit one of the blades of the clamp. This blade is passed through the anus into the

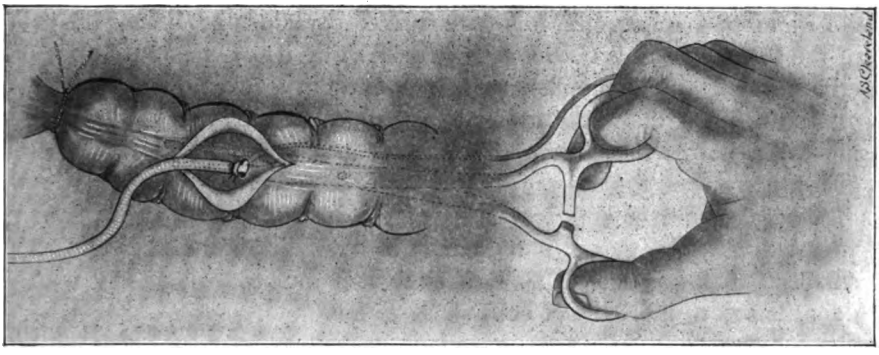

Fig. 2.

bowel and passed through the opening in the mucous membrane until it projects for the distance of an inch or an inch and a half. The ureter, which has been prepared, is placed over this blade. The blade, by the way, is hollow, having an opening through its center large enough to allow the free passage of urine, the opening passing off

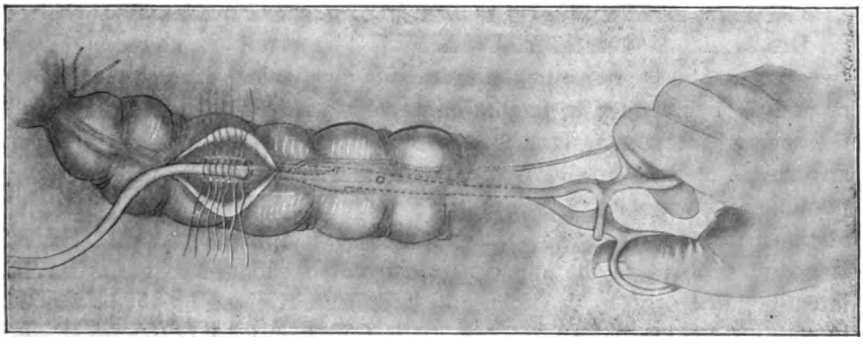

Fig. 3.

to the side of the blade lower down. After the ureter is put upon the blade, a small piece of catgut is tied around it to secure it at a point where there is a slight notch in the blade. This secures the ureter to the blade; the blade is then partly withdrawn so as to draw

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the ureter through the bowel opening into the interior of the gut. Only about one-half inch of the blade is outside of the denuded surface, and at this point the forceps are closed and locked, and the ureter secured to the mucous membrane and the denuded portion of the bowel. The blade remains clamped until it comes away as the Murphy button does by pressure atrophy. The opening in the bowel is now closed around the ureter. As the ureter contains the hollow blade of the forceps there is no danger of constricting it. One suture, properly placed, will accomplish that; so that but one catgut suture is really necessary to fix the ureter to the mucous membrane and to the muscular coat of the bowel. Then, with the application of two rows of catgut sutures, the ureter is buried, and the operation is finished.

There should be different sizes of the instrument, as the ureters vary markedly in size. The opening at the side of the blade has a small olive tip, over which a rubber tube is slipped, which will conduct the urine out of the bowel.

Intestinal Anastomosis: Clamp and Enterotome; A Modification of Grant's Enterotome; An Aid in Suturing.

By Alexander Hugh Ferguson, M.D.

(See page 104.)

Discussion.

Dr. M. L. Harris: Mr. President.—The clamp exhibited by Dr. Ferguson adds one more to the numerous mechanical devices that have recently been invented to facilitate intestinal suture and to approximate the severed intestine. It is well known that it is impossible to utilize any single method in all cases. Anatomical peculiarities make it impossible to always unite the intestine end to end, for instance, so that at times we are obliged to make use of lateral approximation. There is no question as to the superiority of end to end union in the small intestine, when this is possible, and lateral approximation in the small intestine should only be used when it is found impossible to utilize the end to end method, through lack of familiarity with it, or from anatomical peculiarities, adhesions, or other reason.

The clamp which Dr. Ferguson has presented is, I think, the best of the mechanical devices which have been invented for facilitating suturing. There are other things to be considered in an intestinal operation besides rapidity and facility. We must look to the ultimate

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result. Dr. Ferguson has called our attention to the La Place forceps for doing end to end operations, as well as lateral. While this forcep will certainly facilitate to some extent the suturing of the intestine, it produces a condition in the intestine which surgeons have for years tried to avoid, consequently the disadvantages of this forceps more than counterbalance the ease with which suturing is done. For instance, the diaphragm formation in the end to end union with the use of the La Place forceps may be marked and the liability of stricture forming at that point is in proportion to the degree of diaphragm formation. This point alone would condemn the La Place forcep in end to end enterorrhaphy. The same objection I would make to Dr. Ferguson's clamp when used in making an end to end operation, and I noticed that the Doctor was not very enthusiastic in recommending it himself for that operation. The superiority of the suture in general over mechanical devices cannot be denied. It is found that after every method of intestinal union, with which we are familiar, the point of union becomes rapidly weaker during the first four or five days; in fact, immediately, or a few hours after the union is made, by whatsoever method with which we are familiar at the present time, the point of union has much more strength than it will have at the end of forty-eight hours, and each succeeding twenty-four hours the point of union diminishes in strength until we reach the end of the fourth day. So we must extend the time which Dr. Ferguson said, forty-eight hours, when there is the greatest danger of leakage, to the fifth day, when it is found the majority of the cases develop bad symptoms; I mean those that pass over the immediate results of infection from operation. Any method which is used must approximate the intestine and keep it there beyond the period of five days. After this time the union grows rapidly stronger, so that by the eighth or tenth day the point of union has reached or rather attained the strength of the rest of the intestine. This is the reason why the silk suture, which will last from eight to ten days or even longer, is superior to other methods of approximation. The mechanical appliances alone give strength during the first twenty-four or thirty-six hours to the union, after that the point of union is much weaker under a mechanical device up to the fifth day than it is in those cases where the divided ends have been sutured by silk. I would emphasize more strongly than Dr. Ferguson has done the danger which is present in lateral operations, not only in gastro-enterostomy, but likewise in the intestine, from hæmorrhage. This is certainly very marked in the stomach, and no operation should be trusted on the stomach which does not

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close or lap the edge entirely of the cut part. The danger of hæmorrhage from the gastric vessels is great, and if the surgeon is not careful in taking close stitches he will leave a bleeding artery in the gastric wall which may result seriously and cause death from hæmorrhage into the stomach. I have seen death take place from this cause. I would not recommend this clamp in cases of gastro-enterostomy, and the Doctor has practically admitted the same point, because the stomach wall is cut through and is not protected by suturing. This danger exists in the intestine as well, but it is not so great. If this clamp be applied at the point most remote from the mesentery, of course there will be little danger of hæmorrhage, but if it were to be applied nearer the mesentery or on the side of the intestine, there would be great danger of hæmorrhage. As I have previously remarked, this clamp is the best that has been devised for facilitating lateral anastomosis, and in that particular operation it will be found a very useful instrument, one which will not simply have a passing value, as most mechanical devices have, but it will have a permanent place in surgery.

Dr. Carl Beck (by invitation): There is one point in connection with the construction of this clamp about which I would like to ask Dr. Ferguson. It closes in the angle, and if he gets any kind of thickness of intestine into it, the intestine close to the joint will be compressed more than that part of the intestine at a distant point; consequently he will not get equable compression. I would ask him if it is not possible to make these two branches close parallel like the Gussenbauer forceps. The danger of hæmorrhage will be greater one point than at another, because the vessels are not compressed at the end so much as close to the joint.

Dr. Reuben Peterson: I do not rise to criticise the paper, as Dr. Ferguson has done this thoroughly himself. I have only words of praise for the practical application of this instrument. I have used it a number of times; and it certainly facilitates the introduction of interrupted or continuous sutures. I did a gastro-enterostomy on a dead dog, and therefore have not had an opportunity of testing the possible deficiency of the instrument in controlling hæmorrhage.

There is one point I have observed in using this instrument. In passing sutures in the first portion of the gut, it is desirable to carry them well around the end of the forceps. If this is not done, when you begin to suture the other side you will find it awkward to introduce the sutures.

Dr. Ferguson has referred particularly to its adaptability for lateral anastomosis. I agree with Dr. Harris that in all probability it will

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be principally used for that operation. When it is used for end to end anastomosis, the same defects will be observed that are noticeable in the La Place forceps.

Dr. CHARLES D. LOCKWOOD (by invitation): During the last four months, in connection with Dr. Van Hook's surgical work at the Northwestern University, I have done end to end anastomosis on twenty-five dogs, and we have relied solely on the use of the needle and thread, doing end to end anastomosis after the manner of Kocher. Since we began to do this work with the students, the students are now doing most of the work under our instruction. We have had two deaths, one of which was due to the anæsthetic, and another was ascribed to two operations which were done: End to end anastomosis after the manner of Kocher, and the introduction of the Murphy button, which was too large for the intestine, and which I believe caused the death of the dog at the end of twenty-four hours. I mention this because Dr. Ferguson spoke very unfavorably of the use of the Lembert suture. Our experience with this suture has been very favorable.

Dr. E. J. SENN (by invitation): As regards the value of data relating to experiments on dogs, intestinal anastomosis has been repeatedly performed by ligating the intestines, allowing pressure atrophy to take place, the ligature gradually cutting its way through and a plastic exudate being thrown out. This has been done frequently with successful results in dogs. However, until this operation has been done on the human subject we cannot speak with any degree of certainty as to its failure or success.

I wish Dr. Ferguson would explain to us why he considers the Lembert suture so inferior or of little value. I thought it was classic and had been ever since its promulgation by Lembert, and this is the first time I have heard of its being a failure.

Dr. FERGUSON (closing the discussion): I have been very much pleased with the discussion, although some of the speakers have wandered a little from the purport of my paper. Probably I am to blame for it myself, particularly with reference to the Lembert suture, because I mentioned that incidentally.

In my experimental work on dogs I have been able to force water through between Lembert stitches more readily than when other methods of suturing were used. The best test on a suture is to distend the bowel with water immediately after the operation; if the sewing is insecure the water will spurt out between the stitches. I have done several operations on a dog at one time, then killed it immediately, removed the alimentary canal, tied one end with a cord, fastened the other end

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to the water faucet, distended the bowels with water, and noticed the result. More leakage took place where the Lembert suture was used. The time it takes to tie two stitches in the Lembert method instead of one Halsted, is an additional objection. The Cushing, the Ferguson half-back stitch, the Halsted, Turck's interlocking, and the Cobbler stitch are all safer than the Lembert. Let the latter be as classic as it may, it is becoming less and less used.

With reference to the question raised by Dr. Beck, let me say that this instrument is simply to hold the bowel while you are sewing, and it does not matter whether much pressure is applied or not as long as it holds. I do not think it is necessary to complicate the instrument by adding another joint to bring it together evenly from the beginning of the approximation of the bladder.

The points brought out by Dr. Harris were very good, and I am of the same opinion as he is with reference to the use of this clamp in cases of gastro-enterostomy and in end to end anastomosis. I think it will be of most value in lateral anastomosis. So long as surgeons still stick to end to end suture, use the La Place instrument or the rubber bags recommended by Halsted, I should advise them to use my own instrument in their stead.

The Principles and the Most Rational, Innocent and Effective Methods in the Treatment of Pathologic Retroversions and Retroversio-flexions of the Uterus.

By Albert Goldspohn, M.D.

(See page 126.)

Discussion.

Dr. Fernand Henrotin: At a previous meeting of the Society I discussed this subject so the members know something of how I regard this work. Dr. Goldspohn thought I was a little bit severe at that time. I shall not say very much on his paper this evening, after hearing the results he has mentioned and the statistics he has exploited, except to reassert my belief that the operation he has described is not the operation of choice. After viewing the matter carefully (and I have read what the Doctor has written and said heretofore in my presence), I want to assert my adherence to the old view that a short incision made in the median line, or a median laparotomy, which can be

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made absolutely clean and as near perfect as any abdominal incision can be made, in the class of cases mentioned by the essayist is in every way preferable. There is less danger of hernia following such a small incision. We can see what we are doing much better through a short incision in the median line than one through the inguinal canal as a rule. The doctor brings up the appendages through the incision he has made, and there is no doubt but that when he gets them in the inguinal canal he has them close to him, and he can do what he wishes, but when he pushes his finger behind and loosens the adhesions, something may happen. He cannot see exactly where the adhesions are; he does not have the field of operation exposed to a broad light as we do through a small median incision and see everything we do. If he should strike pus accidentally, he tells us that he would then make a median incision, which would be three incisions through the abdominal wall for the purpose of getting out the pus. He must be exceedingly careful in his diagnosis, or he might encounter pus unexpectedly. When a surgeon introduces his finger through an opening such as he has described and loosens up adhesions, he will meet with pus without knowing it, unless he has made a reasonably large incision to see what he is doing. Personally, I am better satisfied with a small incision in the median line, which enables one to do anything he desires, and making it possible to enlarge that incision if the parts are found sufficiently diseased to demand a more radical operation. The corners of the uterus can be opened up, so that we can resect as much or as little of the parts as we please; we have an opportunity to guard against injuring the bowels and the serous surfaces in the immediate vicinity; we have the further opportunity of exploring the region of the appendix to determine whether or not there is any disease there. In short, it is the common-sense, reasonable, rational way with which to deal with the class of cases under consideration. With our modern methods of suturing and with modern catgut we can bring the parts together neatly, and we have only one incision to close instead of two. It seems to me, therefore, that the median incision recommends itself.

To continue. In women near the menopause, or who have such conditions of the uterus that we do not expect pregnancy to take place any more, or where we remove the Fallopian tube and do operations which preclude the possibility of pregnancy, I favor suspension of the uterus well against the pubes. In such cases ventrofixation is by far the most satisfactory method, and there is less likelihood of re-

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currence; otherwise in women of child-bearing age I shorten the round ligaments intra-abdominally.

Dr. Emil Ries: Like Dr. Henrotin, I have also had occasion repeatedly to discuss the merits of the Alexander operation, as well as the modified operation of Dr. Goldspohn, and I am not convinced that the operation described by Dr. Goldspohn this evening is the method of the future. I am very much in favor of the vaginal operation, although Dr. Goldspohn believes that his operation lends itself more to conservative work than that which is done by means of a vaginal incision. I am sure that I am doing much more conservative than radical work through the vagina. I can look back upon a large number of cases where I have done conservative work through the vagina, where, for instance, the occluded tubes have been opened and seamed and in some subsequently pregnancy has taken place. We also know that in many cases where the retroflexion has been attacked through the vagina, subsequent pregnancy was not disturbed by the operation, and the anteversion produced by the operation was not disturbed by the pregnancy. The method which I have devised for my own use, and which I employed for the first time in January of last year, has so far been very successful, and has not given me any reason for adopting any other method. The method which I have used obviates the objection of the sero-serous adhesion of which Dr. Goldspohn spoke; it does away with the disagreeable, possibly harmful, ventral incision. It permits us to attack the appendages in a more or less radical way, and it is a very simple operation, which can be performed easily in from twelve to fifteen minutes. It may be performed in less than fifteen minutes if we have a simple case to deal with. One reason why I object to the operation of Dr. Goldspohn is that it takes a good deal longer time to do his operation. I do not think he can operate on the appendages through a bilateral inguinal incision, shorten the round ligaments, and close the inguinal canal in fifteen or even fifty minutes. Through his kindness I have seen him operate by this method, and I believe the length of time consumed by him in doing this operation was considerably more than fifteen minutes. However, this is not a very serious objection to the operation. if it is unobjectionable in every other way. But it is not. One great objection is that it is an operation with two abdominal incisions. Another objection is, as Dr. Henrotin has mentioned, the possible presence of pus, and there may be suppuration of both inguinal canals, or of both openings which have been made, predisposing to bilateral subsequent hernia. If the surgeon introduces his finger into the canal.

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meets with pus, and brings the finger out again, he may infect the whole canal. This accident may not have happened to the essayist as yet, but it may happen in the very next case. Suppuration of such wounds is liable to take place. If suppuration of these two canals should take place, the subsequent formation of hernia is possible, although it may have occurred but once or twice. I know personally of two cases which have suppurated, one of which I examined last night. Wherever suppuration has taken place, a subsequent hernia may be expected, particularly if the suppuration involved the fascia.

The principal reason why Dr. Goldspohn has worked out this operation in opposition to the vaginal is the supposed over-stretching of the supports of the ovaries, possibly of the tubes, leading to a possible subsequent prolapse of the ovaries. When Dr. Goldspohn first discussed these operations with special regard to this point, he based some of his arguments on the paper of Saenger, which was published in the *Centralblatt für Gynekologie.** Saenger mentioned that this prolapse had been observed two or three times. He did not state in those cases whether the ovaries before the operation had perfectly normal supports. If the supports had been stretched before the operation, it is possible that if the utero-ovarian ligament was not shortened during the operation, as it ought to have been, the ovaries subsequently became prolapsed. It seems to me there is no reason why we should not shorten the utero-ovarian ligament when the ovaries are prolapsed. This operation can be done through the vagina easily and the ovaries can be held up nicely. If it had not been for the possible stretching of the utero-ovarian ligament, Dr. Goldspohn would not have invented this bilateral inguinal incision. Furthermore, he prefers to shorten the round ligaments through the inguinal canal, because in so doing he preserves the uterine end of the round ligament and cuts away the external (skin) end of the round ligaments which is a little thinner than the uterine end. The difference in thickness is not very great, and if the anchoring of the round ligament in the inguinal canal by stitches may be sufficient to hold up the uterus, as in the Alexander operation, it may also be sufficient if the round ligaments are shortened by intraperitonæal methods. In the operation which I am doing I aim to avoid seroserous union by uniting the serous surface of the

* Saenger says (Centr. f. Gyn. 1896, p. 248):

"If other observations should prove to be a fact I from my personal experience *will not at all represent as firmly established* (ausgemsht)—namely the fact that in vaginal cœliotomies with preservation of the movable appendages the latter as a result of the operation *may* enter into a condition of permanent descensus, then . . . laparotomy would have to be considered."

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round ligament to the uterine surface, thereby producing serofibrous union, which holds very nicely.

I should like to hear Dr. Goldspohn speak of the indications for this operation when he closes the discussion. I have seen some cases of retroversion of the uterus operated on by the Goldspohn method, as well as other methods, some for sleeplessness, and nervous conditions, in which the retroversion itself was a matter of absolute indifference. The retroversion was only one individual symptom, but there was a complexus of symptoms which had nothing to do with the retroversion itself. I have seen patients operated on by this and other methods where the uterus was stitched to the abdominal wall, or the round ligaments shortened, where the uterus had been freely movable and flopping around in the abdominal cavity before operation. Other organs such as the kidney spleen, stomach, etc., were likewise flopping around.

Dr. Reuben Peterson: I believe one of the great objections to the Alexander operation, as it is usually performed, is that the external oblique fascia is not opened during the operation, as Dr. Goldspohn so prominently brought forth. I do not agree with him that it is well to catch this little bit of fat in the forceps as it protrudes from the external ring. I cut down until I reach the external ring and external oblique fascia; I then slip a grooved director into the external ring, cut upwards an inch and a half. Having cut through this fascia, you can expose the ring with retractors and you have an intact canal. Your incision extends as high as the internal ring, and with an intact canal there is no difficulty in finding the round ligament. If you do not make this wide exposure of the canal, you are liable to get into trouble.

I do not think that Dr. Ries is correct in stating that there is not much difference between the outer part of the round ligament and that near the internal ring. There is a great difference, and that is why operations have failed, because the operators have not opened the canal, or only slightly, and have tried to grasp the round ligament by forceps, thereby deranging the relations and rendering it difficult to find the ligament.

Dr. Goldspohn brought out the point that in a large number of cases in performing the Alexander operation, only the broad ligament is raised, and the uterus is pulled up and forward but very little. That is correct, and I believe it accounts for a great many failures following the Alexander operation. But if the operation is done correctly, and the round ligament is pulled out, and the operator after

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stripping back the peritonæum places the finger of his left hand within the vagina and sees that the uterus is pulled forward and that he has a taut ligament, he will not have trouble such as the essayist speaks of.

I can only wonder at the greatness of Dr. Goldspohn's diagnostic ability if he can tell always by bimanual examination what there is within the pelvis. I certainly cannot always do so, and I am frank to confess it. I always tell my students that what we find by a bimanual examination and what we find after the abdomen is opened is very apt to be entirely different. I have thought I had in some cases simple adhesions binding down the appendages in the cul-de-sac or elsewhere in the pelvis, but when I opened the abdomen I found I had pus-tubes to deal with. From this standpoint alone, I place my operations for retrodisplacements of the uterus into two categories, those where I am absolutely sure that the uterus is movable, and I can get the ovary and tube between my finger and I know there are no adhesions, and those where I am not sure. For the first class I employ Alexander's operation. For the last class a median incision and ventrosuspension.

I do not wish to do two laparotomies on the same patient if I can help it. Therefore, I operate through an incision in the median line. I acknowledge that Dr. Ries is right when he says that the round ligaments can be shortened through the vagina. I have seen Dr. Watkins, Dr. Ries, and others do this, but the operation has never appealed to me. I have been able to take care of whatever pathological condition may be found in the pelvis through this opening and I have stitched the uterus to the parietal peritonæum when there is a displacement to be corrected. I do not think we have much to fear from ventrosuspension if the woman becomes pregnant. If we do a *ventrofixation* we have much to fear. We will get either an abortion, or a carrying up of the posterior wall of the uterus, and an interference with labor. A great many operators who attach the uterus to the abdominal wall use the interrupted suture. The interrupted suture is liable to leave a little gap between the sutures in the parietal peritonæum, so that a small portion of the muscle sticks through. Wherever this occurs we may get the attachment of the fundus of the uterus to the muscles, and we have a fixed organ which cannot move upwards. If you attach the uterus, however, by two stitches placed in the posterior part of the fundus, and you are careful by continuous suture to close the peritonæum so that the fundus is attached to the peritonæum alone, I do not believe that you need have any fear of subsequent pregnancy in the majority of cases. That has been my experience. A number of my patients have become pregnant after

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ventrosuspension, and they have been confined without any trouble. The majority of patients in whom I have suspended the uterus in the manner I have described have been cured of their difficulties.

Those who have done the Alexander operation and have performed herniotomies know that this part of the anatomy is peculiarly liable to suppurate. I do not remember hearing Dr. Goldspohn refer to how many cases of suppuration he has had, but in my experience I have had to be doubly careful in doing the Alexander operation or herniotomy. We all judge of these operations by the results. If my results had been poor from ventrosuspension, I perhaps should have turned my attention to inguinal celiotomy or the vaginal operation, but on the average the results have been good, and I have concluded to stick to this method of operating (the abdominal).

Dr. DANIEL H. WILLIAMS (by invitation): It is refreshing to hear a man say that he does not know what pathology there is in the abdomen before he opens it. It is seldom that such a frank expression is made before a medical society.

I rise to speak of a case of intestinal obstruction following ventrofixation. Two years after the operation she came back to the hospital with symptoms of ileus. Within four hours after her arrival at the hospital she was operated on, and there were found two bands running from the uterus to the parietal peritonæum, with a slit between them through which the ileum and omentum had made their way and had become congested, œdematous, and finally necrosed. It was necessary to resect four inches of the intestine and to insert a Murphy button. This was done, and the woman died on the second day from leakage.

This case illustrates that there is danger from ventrofixation. I have seen Dr. Howard Kelly do many such operations and always heard him speak well of his results, and until I had the misfortune to see this case of ileus, I never thought this operation would be followed by any serious trouble. I feel, after seeing this case, that there is danger from the formation of these bands, and as a result we can get an acute strangulation with, possibly, an unfavorable outcome.

Dr. DAVID J. DOHERTY (by invitation): One part of Dr. Goldspohn's paper deserves high praise, namely, his statement that after the lapse of eighteen months on an average he personally investigated the condition of his patients. That is the right way to build up medical statistics. It is gratifying to know that in his cases there was no return of the retroversion and that no hernia occurred. But I would like to ask whether the symptoms persisted? Whether the

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backache, headache, and other vague symptoms which many women and some doctors ascribe to a "tipped-over" womb, continued? I presume that the answer will be that the symptoms disappeared, but being a doubter as to the ascribed cause of such symptoms I ask the question so that the point may be made clear and definite.

Dr. George W. M. Reynolds: I have listened to Dr. Goldspohn's paper with a good deal of interest, and it seems to me that in the discussion the speakers have wandered a little from the subject. There are indications for the Alexander operation, for ventrofixation, and for the use of a pessary, but those indications have not been clearly touched upon. There are cases in which it would be unwise to perform the Alexander operation; while in the case of a virgin uterus, which is freely movable, the Alexander operation would be much more preferable. Again, there are cases in which the use of a pessary would be strongly indicated. It is these points that I would like to hear discussed.

Dr. Alexander Hugh Ferguson: I am pleased to learn that Dr. Goldspohn has had no herniæ following this operation. I wish to make one correction with regard to this illustration (indicating), and that is, he spoke of suturing the different layers of tissue à la Bassini; it is à la Ferguson. In the Bassini operation the origin of the internal oblique is not considered at all, while in the operation performed by Dr. Goldspohn it is. He pushes it up, separates it, then sutures it. In the Bassini operation the round ligament or cord comes out at this point (indicating), so that the relationship of the structures are altered completely.

Dr. Goldspohn (closing the discussion): I have been disappointed in the discussion. I had hoped that during the interval of two years since Dr. Henrotin and I had a discussion on this subject, he would have developed some facts as to this method of operating which could be used better as arguments; we need to know the detailed, remote results in each case of an unbroken series of cases treated by any one procedure. How is it with them after childbirth? This is well done by Dr. Burrage of Boston, who publishes the remote results of 71 cases of the Alexander operation, and of 71 cases of ventrosuspension as far as obtainable and speaks in an unbiased manner. He says that the two Alexander incisions, in the groins, in a year show very much less than a small incision in the median line. That is true.

With reference to adhesive bands, I dare say any one of the gentlemen here, if he had a patient and knew such a band had arisen from some pathological process, would advise that patient to have it re-

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moved. Fortunately, ileus does not occur very frequently after this operation. I believe eight cases of intestinal obstruction have been reported, and the one mentioned by Dr. Williams to-night makes nine.

I have heard the statements made by numerous advocates of vaginal and other ventral operations for this purpose over and over again, saying in substance: "I have done this or that operation so many times, and my patients have gone on and are all right." What does that mean? Anything? Let the gentlemen go and do as I did—search every single case in a series, examine it and report the facts. I defy any one to show as good final results of any other operation as have been obtained by Edebohls, Stacker, Burrage, myself and others, by following this method. Such results cannot be secured by any purely vaginal or other abdominal method of treating these cases.

In reference to the remarks of Dr. Ries, the several cases of prolapse of ovaries which occurred in the practice of Prof. Sänger were not doubtful. Sänger states that the patients did not have descensus ovarii before the operation, but that the operation itself induced it. But that is not the chief reason for the Alexander operation as stated by Dr. Ries. The most important reason for operating through an inguinal incision is that it is the only way we can do an operation without harm, and that will stand, as I expressed it in my paper, the double test of pregnancy. In no case has this shortening of the round ligaments in their natural channels caused any considerable embarrassment to gestation or complication in labor. In thirty (30) cases of Alexander operation, that were not primarily failures, such as need not occur again, pregnancy was subsequently encountered once or twice, and in *no case* did the displacement recur after this. I challenge any of the gentlemen who do ventrofixation and ventrosuspension, or vaginal shortening of round ligaments, to investigate every single one of their cases after years and publish the status of them after labor, as the disciples of Alexander have done. It will be time *then* for them to speak! The Germans were very slow in attacking these cases by the inguinal route. But now it is the preferred method in at least half of all the principal hospitals.

In justice to Dr. Ries, I will say that, after having had a conversation with him, I am more or less familiar with his method of shortening the round ligaments by the vagina, but as he cannot strengthen the weakest point in each ligament, I apprehend that in five or ten years from now it will be found that his operation will not stand the test of a simple, ordinary Alexander operation properly done.

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I am not the only man who believes that better results can be obtained by the method I have described, but I have mentioned the work of four men who are more extensive operators than myself as showing the value of the inguinal route in shortening the round ligament.

My operation is borne much better than regular ventral celiotomies. It does not require too much time, as was stated; especially as it affords a permanent cure and not merely a temporary help until the next labor. Suppuration has occasionally occurred, chiefly owing to too tight suturing, but it has never detracted from the favorable position of the organs, which I also feared.

To Dr. Ferguson I would reply that I had performed this my operation in this way some forty times at least before he said anything about his hernia method. I thought it was Bassini's, but it may be my own instead.

Dr. Reuben Peterson: I want to say in behalf of myself and possibly of the other speakers, that possibly all of the gentlemen who have spoken have endeavored to keep track of their cases. I remember distinctly that my inaugural thesis before this Society dealt with ventrosuspension, and while I did not have the opportunity at that time to verify the results of all of my cases, I wrote personal letters to and examined seventeen cases and reported the results of those examinations. made by myself and other operators, where I could not see the patients myself. The results were published, and I shall be glad to give Dr. Goldspohn a reprint presenting favorable scientific evidence on the other side. To-day, as it so happened, I wrote a letter to a doctor, who wrote me three days ago saying that a patient on whom I had done a ventrosuspension had been confined; that he had attended her during the confinement, and that she had symptoms of a post-partum hæmorrhage. I told him that it was quite necessary for me to know the results of my operations, and that I would be obliged if he would kindly give me the facts in regard to how the woman suffered during labor, if she did at all, and what he thought caused the post-partum hæmorrhage. When I receive a reply from him, I shall be glad to present the facts to the Society.

Dr. Ferdinand Henrotin: I have reported the results of many laparotomies, and in these operations I shortened the round ligaments intra-abdominally. I do not think Dr. Goldspohn or any other man, so far as I know, keeps more careful and better records than myself of all my work. I am constantly writing letters about certain cases that I have lost sight of; I am constantly examining patients that I have operated on by this and other methods, and I can say that several

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of my patients have passed through pregnancy at term and their uteri are in their normal position at present.

Dr. GOLDSPOHN (replying to Dr. Henrotin): If, in my previous remarks, I offended Dr. Henrotin or any of the other members, I beg their pardon. During a discussion I sometimes become excited and my statements may seem a little harsh, but I assure you I did not intend to be personal.

Official Transactions.

C. S. BACON, *Editor of the Society.*

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ECTOPIC PREGNANCIES OPERATED ON BEFORE RUPTURE: THE SIGNIFICANCE OF INTERVILLOUS HÆMORRHAGES IN THE INTERRUPTION OF ECTOPIC GESTATION.*

By C. E. Manierre, M.D., Chicago,
Professor of Gynæcology in the Chicago Policlinic,
and
Maximilian Herzog, M.D., Chicago,
Professor of Pathology in the Chicago Policlinic.

Scattered through gynæcological literature for the last ten or fifteen years there have been cases of tubal or ectopic pregnancy which have been diagnosed and operated during the first two or three months before rupture took place. It is almost certain that all cases of ectopic gestation are originally tubal, and that the varieties which are found later in the history are due to secondary changes. For instance, we may have a partial tubal abortion with the extrusion of the fœtus from the fimbriated extremity and the continued growth of the placenta, party within the tube and partly on the peritonæal surfaces of the pelvic organs. Or we may have a rupture of the tube between the layers of the broad ligament giving rise to the so-called intraligamentary variety. While tubal pregnancy may after rupture go on to term, or nearly so, the complications of such cases are so serious and the results comparatively poor, that it seems as if every case of this kind should be operated just as soon as we have a reasonable suspicion of its presence. Of course, the number of cases which we shall be able to diagnose in the early weeks will always be small, because patients as a rule will look upon the ordinary symptoms arising as something trivial and unworthy of attention. If, however, physicians would take pains to examine carefully every woman with an irregular menstrual flow during the early weeks of what is supposed to be normal pregnancy, there will be many cases discovered which would be otherwise overlooked.

The mortality of extra-uterine pregnancy according to Schauta in the cases left alone was 68.8 per cent., basing his figures on 241 cases. A. Martin has shown that 36.9 per cent. of 265 cases of extra-uterine

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pregnancy recovered under an expectant plan of treatment, but he has also shown that 76.7 per cent. out of 515 cases recovered under operative treatment. These figures are taken from Howard Kelly's recent book, and he adds that in the hands of a good operator the mortality would not exceed 5 or 6 per cent. In the early weeks I believe that operations in cases yet unruptured would be followed by a still smaller rate of mortality. Werth's advice, "one should remove every ectopic sac the same as a malignant growth, as quickly as possible, and radically," is most excellent, and I believe should be implicitly followed during the early weeks and these remarks are intended to apply only to the cases recognized at this period.

The diagnosis of unruptured cases is based on the cessation of menstruation for one or two periods, followed then by an irregular hemorrhage usually slight, and accompanied by more than ordinary pain. Sometimes the period may be delayed only a week or ten days, when the bleeding occurs, accompanied by the usual feeling of nausea, and particularly if the patient has a history of more or less continued sterility, it is always an indication for the bimanual examination. Brettauer (*N. Y. medicinische Monatschr.*, February, 1895), in a very interesting article on his personal experience with ectopic gestation, says: "By far the most important symptom which moves the patient to consult the physician is the constant appearance of atypical, not profuse uterine bleeding caused by contraction of the tubal wall, and ordinarily accompanied by labor-like pains." Bimanual examination is now positively indicated, if necessary under an anæsthetic, and by this examination I mean a thorough outlining of the pelvic organs, and not the simple introduction of one or two fingers into the vagina, and a guess as to the condition, as I have seen so many men do. The uterus will be found somewhat enlarged in most cases and at one or other side will be found a cystic mass which can usually be mapped out as connected with the uterus at the cornu. This mass, of course, cannot be distinguished by means of palpation, in any positive way, from a hydro- or pyosalpinx, but a non-adherent ovarian cyst can often be recognized by its freedom from any close connection with the uterus. Meinert (*Centr. f. Gyn.*, Nos. 6, p. 171, 1897) says "interstitial myomas, and also inflammatory tumors of the adnexæ, especially in the subacute stages which give rise to atypical bleeding, can very easily lead to errors in diagnosis." In these cases the history of the patient will help to prevent such errors. A patient with no history of a pelvic trouble, and probably a long period of sterility, ceases menstruating, a little later has pain, and begins to flow. In numerous cases the

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pregnancy has existed only 14-21 days, so that menstruation had not yet been passed, but here the same rule of an irregular bleeding would apply. The last menstruation, presumably protracted, is already signal of the fœtal death.

Leopold looks upon genital bleeding as a sign of fœtal death. Brosin contradicts this, because he found a living fœtus in spite of bleeding which lasted weeks. Expulsion of decidua from the uterus is looked upon as a sign of tubal pregnancy, and of course this sign is of value only in cases where the microscopist finds decidual tissue present, and the complete absence of chorionic villi. To be sure, this sign can only occasionally be of value in the diagnosis because it will not always occur.

With reference to treatment I fully believe that in all the early cases diagnosed before rupture has occurred, that we have only one method of procedure which is uniformly reliable and safe, namely abdominal section and removal of the pregnant tube. The operation is practically almost free from danger in the hands of an operator who is in the habit of doing abdominal work. The difficulty is no greater than that met with in the operation for the removal of small ovarian cysts or a hydro- or pyosalpinx without adhesions, and most of the cases are without adhesions. I do not want to be misunderstood as to the class of cases in which I should most urgently press upon patients the absolute necessity for immediate operation, just as urgently as I should in cases already ruptured and bleeding. These are the cases which are within the first eight to twelve weeks of pregnancy. They are usually quite free from adhesions and can be removed with only the smallest amount of risk. It is perfectly well known to the profession that in certain cases rupture takes place between the layers of the broad ligament, hematoma is formed and eventually may be absorbed. In this latter class the symptoms vary with the amount of hæmorrhage and here there may be room for an honest difference of opinion as to whether they should all be operated, and if so, whether by the abdominal or the vaginal route. Janvrin, in the Transactions of the American Gynæcological Society, 1888, is a very warm advocate of what he calls the primary laparotomy in tubal pregnancy, and advises it in all cases as soon as a diagnosis has been made. He says whether there has been slight laceration of the peritonæal covering and consequent small hæmorrhage, accompanied by tearing of the nerve filaments and some shock; or whether there has been a decided rupture of the entire tube, with severe shock and partial or total extrusion of the fœtus into the abdominal cavity, or even if there has been no rupture at all."

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The following cases in my work are interesting as bearing upon this topic, and I take the liberty of reporting them.

Mrs. A., 35 years old, married ten years. Mother living, in good health. Father died of some œsophageal growth at 50 years. Two brothers living, in good health. One sister died of scarlatina, and one of appendicitis. Patient had measles and tonsillitis during childhood. First menstruation at 14 years, always regular before marriage and lasted five or six days. Had one child born eleven months after marriage. During pregnancy had synovitis of right knee-joint (probably gonorrhœal), which confined her to bed for two months and resulted in partial anchylosis. General health always been good.

Last menstruation May 22, 1898. July 20th she vomited, was dizzy and had intense pain all over the abdomen. July 23d, had a similar attack. Since July 26th has had a dark, brownish-red discharge from the vagina. July 30th, patient came to my office for examination as to whether she were pregnant. Examination highly unsatisfactory, but told her that from her history should say she were pregnant, but the bimanual gave no positive evidence. August 6th, patient's husband brought me a cast from the uterus which patient had passed some hours before without much pain. The following day examined patient in bed at home and could then very distinctly outline a mass to the left, and above the uterus, which mass was moderately sensitive. In this case there were almost no adhesions to the tube and the mass was mapped out more satisfactorily and a probable diagnosis of ectopic gestation was made. After the examination under ether the patient complained of considerable abdominal tenderness, and increased rapidity of the pulse which must have been due to hæmorrhage in the abdominal cavity. The manipulations of the examination had produced enough trauma to cause a very limited intraperitonæal bleeding, which was shown by the presence of a few clots at the time of the operation some three days later.

The left unruptured pregnant tube was removed by laparotomy August 11, 1898. The right tube was resected, as it was the seat of chronic salpingitis, the fimbria were closed, and the infundibulum was markedly enlarged. The fœtus was about seven weeks old. In this case there was almost no adhesions to the tube and the mass could be turned out on to the abdominal wall with perfect ease. Patient never had an abdominal symptom after the operation, made a complete and perfect recovery and has continued in most excellent health ever since.

In examining this history we find that the bloody discharge from

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the vagina began seven to eight weeks after the last menstrual period, and upon the removal of the tube, the age of the fœtus just about corresponded to this date. Is the uterine hæmorrhage the signal that the fœtus has died from an intervillous hæmorrhage?

Mrs. W., 32 years of age, married, no children, no miscarriages. Married at 25 years. Parents both living and in good health; father 67 years old, mother 65 years. Five brothers and two sisters living and in good health. One brother died of encephalitis at 18 years, and one sister died of pulmonary hæmorrhage.

Patient had the ordinary diseases of childhood. Menstruated at 11 years, but was never regular, frequently went six to twelve weeks, but had no dysmenorrhœa. The menstrual discharge always rather profuse. Six years ago had a uterine hæmorrhage lasting some three weeks, during all of which time the patient was in bed and felt very week for a long time afterwards. She was very constipated, and had curettage and also some operation on the rectum at this same time. A year and a half later, patient had another hæmorrhage from the uterus which lasted some five or six weeks. Since then her general health has been fairly good.

July 1, 1898, while in Louisville, and when it was about six weeks from her last menstrual period, she was taken with dysentery. July 2d, she menstruated during the day. She returned home July 2d, and after the 4th again menstruated; this flow continuing until after she had had her abdomen opened on August 20, 1898. About the time of her first flow she had pretty sharp abdominal pains which were attributed to the intestinal trouble that lasted a week to ten days.

I first saw the patient July 11th, but at that time she declined a vaginal examination because she was "unwell." She was then having a little temperature, not over 100° F., her pulse was not much accelerated, had some tenderness over the abdominal wall, and griping pains which were attributed to the intestinal condition, on account of the frequency of the stools and the accumulation of gas in the bowels. General condition fairly good. On making bimanual examination some four days later the os was found somewhat patulous admitting first joint of examining finger to internal os. Something which felt like decidual or placental tissue was found in the cavity. At the right of the uterus was to be felt an enlarged tube which was only slightly sensitive on pressure. Advised curettage which was not allowed until July 25th, and then only because the flow did not stop. On the discovery of the enlarged tube, had advised her removal to the hospital so that both a curettage, and removal of the tube at the same

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time could be done, but the patient stated very positively that the physician who had curetted her several years before had told her she had an enlarged and inflamed tube at this time. This, of course, favored a diagnosis of chronic salpingitis, and curetting was finally done at patient's house. A moderate quantity of rather offensive tissue was removed from the uterus July 25th, which had the appearance of ordinary placental or decidual tissue. For a few days the uterine discharge decidedly diminished, but then again increased and became the same as formerly. Of course, ectopic gestation was suspected but the history which the patient gave so positively of a chronic tubal trouble, the small size of the mass, and the unusually free mobility of it, spoke decidedly against this diagnosis. After curetting a great deal of the severe pain over the abdomen disappeared. The bloody discharge continued until August 18th, when the patient went into the hospital, having by that time become convinced that the discharge was due to the tubal difficulty.

Operation August 20, 1898. Removal by laparotomy of the right unruptured tube with five weeks' fœtus. Resection of left ovary for microcystic degeneration, and separation of adhesions around left ovary and tube. The recovery was complete and uninterrupted. In this case the adhesions around the pregnant tube amounted to almost nothing and the operation presented no difficulties whatsoever. The patient made an uneventful recovery from the first, and her health has continued excellent to the present time.

The same thought arises in connection with this patient as with the other one. The pregnancy was found to be about five weeks old, which was just about half the length of time between the cessation of the last menstrual period and the irregular flow on July 2d, which again suggests the possibility of the uterine hæmorrhage being the expression externally of the death of the fœtus from intervillous hæmorrhage, which was revealed by the microscopical examination made by Dr. Herzog. Of course, in this case the mistake was made of not having the scrapings examined at the time of the curettage, which might have given us a clue. If decidual tissue had been found in these, and chorionic villi had been absent, we could have concluded the presence of ectopic pregnancy.

Pathological Report by Maximilian Herzog, M.D.

Tubal pregnancy according to the statements of most authors who have written upon the subject, is almost universally interrupted by

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either one of two occurrences, by rupture or by tubal abortion. *Martin* and *Orthmann* (Martin: Die Krankheiten der Eileiter, p. 331) in their recent elaborate treatise say: "In the majority of cases there occurs—as a rule during the first four months—an early interruption of tubal gestation. The interruption is brought about by either one of two events, either by a tearing of the gestation sac or by abortion. It was Werth who first called attention to the latter type, the significance of which is more and more recognized." *Webster* (*Ectopic Pregnancy,* p. 74, 1895) in enumerating the causes which terminate ectopic gestation, among other events mentions the following: "In a number of cases the ovum may die, as a result of hæmorrhages in its membranes but without very marked outpouring of the blood around it. There is thus formed what is known in uterine pregnancy as "blighted ovum," "fleshy or carneous mole," or "apoplectic ovum." The amount of blood extravasated varies. It may be limited to the decidua and chorion, and may be so great as to compress and so almost close the amniotic cavity. The fœtus may be partly or entirely destroyed. Immediately after these changes the ovum looks like a fresh blood clot." *Henrotin* ("Practice of Obstetrics by American Authors," p. 362, 1899) touching upon the same point states: "An ovum during its first few weeks of growth, depending as it does for life upon very delicate chorionic villi lightly attached, is in great and constant danger of destruction, the circulation is cut off, the ovum is partially or totally detached. . . . ."

It appears to me that the most frequent primary cause of disturbance of the nutrition of the ovum and of the interruption of tubal pregnancy is neither rupture nor abortion, but hæmorrhage from the tube wall or gestation sac into the intervillous space. Even if these hæmorrhages are at first not so severe as to detach the chorion more or less completely from the decidua, they are dangerous under any condition to the development of the embryo, because they are liable to detach and crush a number of villi and in the course of time generally will cause the death of the embryo.

In the histologic examination of thirty to forty specimens of tubal pregnancies, many of which were obtained by operation, shortly after rupture had taken place, I was struck by certain observations. It was noticed that the degenerative changes of the fœtal placenta were so great that they must have antedated rupture for a considerable period. By the study of the blood in the intervillous space and the degenerative change of the villi, I came to the conclusion that hæmorrhages from the gestation sac at the site of the placenta occur very frequently and

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then often interrupt tubal pregnancy long before a rupture takes place. *These hæmorrhages may very appropriately be designated as "intervillous hæmorrhages."*

The two cases of Dr. Manierre, both operated on before rupture had occurred, offer material well adapted to substantiate the claim made above. The microscopic examination of these specimens, in which none of the degenerative changes found can be connected with rupture, because none had taken place, furnishing the following result:

Case I.—Mrs. A. (Fig. 1.) Amnion and chorion are completely

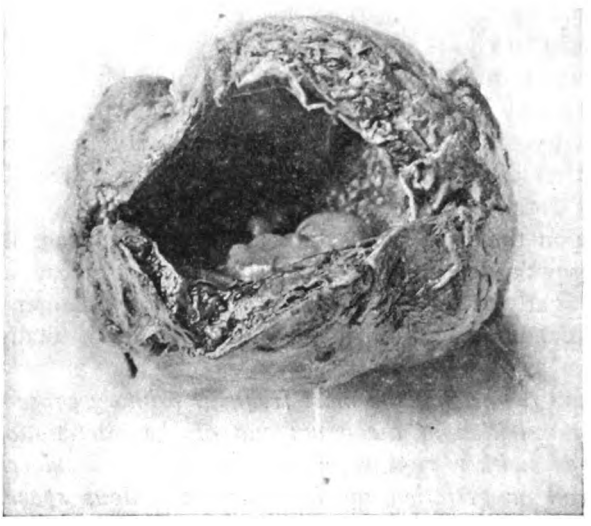

Fig. 1. Tubal pregnancy, about seven weeks advanced.

fused. The amniotic epithelium is well preserved. The amniotic mesoderm is likewise in a fair state of preservation. The chorionic mesoderm shows some degenerative changes, its cells are not so well preserved and the nuclei are frequently indistinct, in some places this tissue has become coarsely fibrillar and here nuclei are entirely missing. The chorionic mesoderm is slightly infiltrated with hematoidin granules. The two ectodermal layers of the chorium, the Langhans layers and the syncytium, can in some places be well seen with their distinguishing features. In others, a single layer is present only, either the Langhans, with large swollen cells, or a very flat syncytium;

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while in still other spots both epithelial layers have entirely disappeared. The intervillous space contains villi in all stages of degeneration. Perfectly normal villi are entirely wanting. Degenerative stages are shown to a degree of the mere shadow of a villous consisting on section of an indistinct spherical mass with a hyaline band as its periphery and a granular débris as its center. Blood vessels could not be found, either in the chorion or in the villi. The latter are contained in a network of fibrin, granular débris and hematoidin crystals and granules. The gestation sac opposite the placenta is quite thin. Towards the intervillous space it shows a small band of a compacta, composed of large degenerating decidual cells. The band presents an abundant infiltration with round cells of the lymphocyte and the polynuclear leucocyte type. Many of the latter show nuclear fragmentation. Outside of the compact layer of the decidua there are found large open spaces (spongiosa); these are, of course, not true gland spaces, but they have originally been formed by the fusion of the plicæ of the tubal mucosa. On the outside of the spongiosa there is a thin layer of fusiform cells and fibers. *Muscular fibers were not found in this layer.* The two layers described last show a round cell infiltration though not as marked as the compacta. There are also found maternal blood sinuses in the wall just described, they are of very large caliber and their lumen shows granules, fibrin and also red blood-corpuscles fairly well preserved in size, shape and staining properties.

Transverse section from parts of the tube to the inside of the gestation sac show well preserved tubal plicæ. The lining epithelial cells are of the columnar type and their cilciæ can be well seen. The core of the plicæ shows enlarged vessels surrounded by connective tissue cells which are not of the slender type found in the non-pregnant tube; they are on the contrary quite large and oval with large vesicular nuclei and very much approach the type of decidual cells. Here the muscular fibers of the tube wall are very much hypertrophied and the bundles have been pushed apart by intervening connective tissue. Foci of small, round cell infiltration are seen everywhere in the muscularis, particularly around enlarged vessels. The peritonæal covering does not show any marked changes.

Case II.—Mrs. W. (Fig. 2.) It is hardly necessary to go into all of the details of the result of the microscopic examination of this second case, since it is in most respects only a repetition of the result furnished by Case No. 1. The following exceptions, however, must be noted. While the intervillous space like in Case No. 1 shows granular débris and the derivatives of decomposing hemoglobin, it also shows densely crowded

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blood corpuscles of the maternal type, normal in size, shape and staining properties. This shows that blood from the maternal tissues must have entered into the intervillous space shortly before the removal of the pregnant tube, while in Case No. 1 the microscopic examination shows that this cannot have been the case, since all the blood in the intervillous space was badly decomposed.

In Case No. 2 there are also found a considerable number of badly degenerated villi, but many of them are in a very fair state of preser-

Fig. 2. Tubal pregnancy, about five weeks advanced.

vation with fairly normal mesodermal and ectodermal elements. Blood vessels with blood cannot be seen either in the chorion or in the villi; in some places, however, it appears as if collapsed empty blood vessels could be made out.

The gestation sac in Case No. 2 is much thicker and shows less marked degenerative changes, as the sac in Case No. 1. The vessels are quite thick-walled, most of the thickening being due to a subendothelial proliferation. The round cell infiltration of inflammatory changes is likewise found freely. Where the plicæ of the tubal mucosa are still preserved, they have become club-shaped, their epithelial cells

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are somewhat flattened and their core shows typical large decidual cells.

From the microscopic examination of both of these cases it is seen that hæmorrhages had occurred into the intervillous space and extensive blood coagula had been formed in them. These had damaged the villi, interfered with the nutrition of the embryo and brought about the death of the latter.

One of the embryos was found to be macerated, one was yet in a fair state of preservation. Considering the thinness of the gestation sac in Case No. 1 and its advanced state of degeneration, a rupture would probably have taken place soon. In Case No. 2 this danger seems to have been less imminent.

We must from a pathologic point of view strictly differentiate between the events and phenomena which really interrupt tubal gestation and those occurrences like rupture and tubal abortion which so frequently lead to the most urgent clinical symptoms. This is, of course, by no means a matter of theoretical interest only, but one of the highest practical importance. If it should be possible to establish a set of symptoms as characteristic for "intervillous hæmorrhages," the operator could step in in good time to save his patient from the great dangers of subsequent rupture.

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THE EXAMINATION OF THE SIGMOID COLON.*

By Dr. A. W. Abbott, Minneapolis, Minn.

In 1887 Otis, in his monograph upon the rectum, described the using of "suitable retractors" in the lower bowel, stating that he was enabled thereby to inspect its lumen for five and one-half inches. Several years before this Van Buren had advocated the use of the Sims speculum for the same purpose. In 1892 Dr. Howard Kelly devised his cylindrical sigmoidoscope, which was a decided advance, in that it permitted the inspection of a part of the sigmoid. The Sims speculum is now justly recognized as affording the most comprehensive view of the lower two-thirds of the rectum of any instrument yet devised. Dr. E. C. Dudley has especially endorsed its advantages.

My purpose in this paper is to describe a method whereby not only the rectum but from four to six inches of the sigmoid colon is generously exposed to inspection for all diagnostic purposes and made a satisfactory field for treatment and operation in suitable cases.

Recently we are coming to recognize that many of our failures to cure pelvic diseases are due to our overlooking some important abnormal conditions in the bowel.

The chief reasons for this neglect are that the bowel must be previously cleansed, there is ordinarily more or less pain unless an anæsthetic is used, but especially because the instruments hitherto available have been inadequate.

Following the later anatomists, the rectum and anal canal will be considered as that part of the bowel beginning at the anus and extending to opposite the body of the third sacral vertebra, nearly straight, immovable posteriorly, and but slightly extensible, thus having a pretty constant length of about six inches; the sigmoid colon as extending from the upper limit of the rectum to opposite the crest of the ilium, having at least two marked curvatures, being extremely mobile and distinctly extensible. The total length, therefore, from the anus to the lower end of the descending colon may vary from eighteen to twenty-eight inches.

In examining the sigmoid it is essential to remember the downward curve just above the recto-sigmoidal junction and the return curve as the sigmoid passes upward to the descending colon, and that these

Read. For *Discussion*, see page 176.

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curves and others in certain subjects, as well as the great mobility of the sigmoid, are due to the long meso-sigmoid. Whether the loops fall to the right or the left and what particular shapes they assume, make no essential difference and need not be considered, as will be seen later. It is essential that we realize that we cannot pass with a straight instrument much beyond the lower curve. This is explained not only by the difficulty of passing a straight instrument around a curve, but also because the long meso-sigmoid and the extensibility of the bowel allow us to push the point of the instrument into close proximity of the lower border of the ninth costal cartilage without passing more than six inches into the sigmoid, and there is no way in which we can draw more of the bowel over the end of the instrument. The distance in a direct line from the anus to the costal cartilage opposite the end of the ninth rib, as measured by callipers, averages about twelve inches or a little less in adults. I was surprised to find the measurement very constant in males as well as females, and in tall as well as short persons. Relative to their height the distance will average a little greater in the female than in the male. In a child of 6 years the distance is about eight inches. In a child of 10 years, about nine inches. This fact should always be borne in mind in examining the bowel in children.

As the anus lies in a line a little posterior to the sacro-iliac junction, a straight line drawn from the anus over the left psoas muscle and continued forward, will touch the anterior abdominal wall about opposite the end of the ninth rib. But the anus can be stretched somewhat toward the pubis, so that when a straight instrument is passed up the bowel on the pubic side, it will not touch the anterior abdominal wall quite so soon as when laid on the coccygeal side.

Both the left lateral and the knee-chest positions, while necessary for the inflation of the bowel, tend in some degree to carry the point of the instrument still farther forward by bending the body backward. As the meso-sigmoid is said to vary somewhat in length it might be inferred that the sigmoid could be carried higher in some subjects than in others. I have never, however, observed a sufficient variation to appreciably affect the result in experiment or practice.

Theoretically, then, a straight instrument cannot be passed more than twelve inches up the bowel in the adult. The following experiments on the cadaver demonstrate the truth of this theory.

Experiment I.—Cadaver adult male. Straight retractor passed nine inches up the bowel; the point of instrument felt to right and an inch above umbilicus. Retractor left in situ and body opened. Point of re-

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tractor found pushing up sigmoid at first curve. This experiment repeated several times with same result.

Experiment II.—Cadaver adult male. Straight retractor introduced nine inches. A half curved needle then passed with suture into wall of gut near the upper end of retractor and the suture tied. Body opened and suture found in same position as point of retractor in Experiment I. This experiment repeated with same result.

Experiment III.—Cadaver adult female. Straight 12-inch retractor passed eight inches. The lumen of the bowel could now be seen folded together, but the instrument could not be made to enter. The point of the instrument was felt opposite and to the right of the umbilicus and impinging on he anterior abdominal wall. The diagnosis was made that there were adhesions restraining the upward movement of the sigmoid. The body was opened by Prof. C. A. Erdman and Dr. Campbell. The retractor was held in place while the body was turned upon the back and the abdomen opened. The sigmoid was found pushed up under the omentum. The omentum was now drawn aside out of the way. The point of the instrument was found stretching the sigmoid, having passed two and one-half inches up that part of the bowel. Even with the abdomen open and the fingers directly holding the bowel, Dr. Erdman could not work it over the point of the retractor. The reason was very evident. The sigmoid just at this point was attached to the right ovary by a firm band. This was cut and the instrument easily passed two inches farther, but was again arrested by a strong sigmoidal adhesion upon the left side of the pelvis. This was broken and then the instrument passed easily until the point reached the level of the ninth rib, overriding the transverse colon, stomach and part of left lobe of the liver, when it was again arrested by the now fully stretched meso-sigmoid. There was still left of the sigmoid which had not been entered by the retractor, about eight inches. The omentum was now replaced and the retractor passed up the bowel and under the omentum as occurred before the body was opened. The point of the instrument pushed up the transverse colon, dimpled the stomach, the point being felt behind the left lobe of the liver. This experiment positively and clearly demonstrates that the advance of a straight instrument in the sigmoid is arrested by the tension of that part of the meso-sigmoid which pertains to the sigmoid in the vicinity of the first curve. Consequently, the longer the meso-sigmoid, the farther the instrument can be introduced, and that a short meso-sigmoid or adhesions act, on the contrary, to limit the distance to which such an instrument can be inserted.

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Experiment IV.—Thinking that possibly the rigidity of death might have influenced the previous experiments unfavorably, I selected a case in the living subject, in which I wished for other reasons to make an abdominal opening. The case, being non-inflammatory and hence free from adhesions, was considered a fair one for experiment. Under anæsthesia, the patient in the knee-chest position, a long Kelly's sigmoidoscope (fourteen inches) was passed eight inches. Not succeeding, after some effort, in going higher with this instrument, I introduced under the eye a straight retractor, after which the Kelly sigmoidoscope passed readily to ten inches. The point was felt a little to the left of the median line and about an inch below the ninth rib. The obdurator was now withdrawn and a long wire sponge-holder with the end well protected with gauze was passed to the end of the cylinder. This was held exactly in place by an assistant during the whole experiment. The cylinder was withdrawn over the wire, leaving it in place. The patient was turned on her back and the abdominal opening made. The upper part of the rectum was found slightly and the sigmoid markedly stretched upward and the meso-sigmoid tense. The rod was felt passing over the left psoas muscle and thence upward nearly to the ninth rib, the point pressing against the anterior abdominal wall. The bowel was now seized and held by the fingers at the point to which the sponge-holder reached, the sponge-holder withdrawn and the bowel allowed to resume its usual position. It was evident that the instrument had not passed more than four inches into the sigmoid. This experiment was verified by Drs. Erdman, Byrnes and Davis, of Minneapolis. An instrument more than twelve inches long will stretch the mesosigmoid to its fullest extent and carry the sigmoid against or upon the stomach or transverse colon. To make the instrument longer than twelve inches is therefore useless. It also follows that under the most favorable circumstances we may not expect to be able to see by means of any speculum yet devised more than the full length of the rectum and, at the very most, six inches of the sigmoid. If the sigmoid, in being pushed upward, glides under the omentum, it will be arrested sooner than if it pass over it. In all the examinations I have made, except in Experiment 3, either the omentum was pushed upward or the sigmoid passed over it, as seen after the body was opened. It may seem that I have attached too much importance to a very simple proposition, but my excuse is that I thought I could examine a part of the descending colon before I began my investigations, and some of our latest and best text-books state that the colon as well as sigmoid may be seen through a speculum. A very late article by an excellent

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surgeon states that he uses a Kelly tube to explore as high as the middle of the descending colon. I wish to give Dr. E. C. Weston of Minneapolis the credit of suggesting the reason of my error at the time of my first experiment. While demonstrating that we cannot make as high an inspection of the bowel as some have supposed, I wish to doubly emphasize the importance and advantages of obtaining a perfect view of that portion that we can inspect.

My method is as follows: The patient is given a cathartic two nights preceding the examination, and on the following night a high enema. This leaves the bowel clean and dry for examination the following morning.

The results are much more satisfactory with an anæsthetic, but this is frequently unnecessary.

The patient is placed on a table in the left lateral position, the hips being elevated about six inches on a sand-bag. If a table can be utilized that will lower the head and elevate the buttocks as much more, it will be an advantage. The knee-chest position is also very satisfactory. A good electric forehead lamp with darkened room makes the best condition. An ordinary short Sims speculum introduced on the coccygeal side will now display the inner surface of the rectum, so that the so-called valves can be seen with perfect distinctness. A straight retractor eight to twelve inches long is now passed on the pubic side, and just after the point has passed the valves and under the guidance of the eye, the point is carried slightly to the patient's right, and then to the left and forward, when under normal conditions the instrument will glide easily to its full length and the whole lumen of the bowel is brought in view. Any force used in pushing forward the instrument in the bowel is not only unnecessary but dangerous. The instruments can be shifted, so that any part of the surface can be seen. Dilatation of the sphincter ani, of course, aids materially in the admission of light, besides giving more room for manipulation. In the male the introduction of a long instrument is not quite so easy and the distension and consequently the view of the bowel not quite as satisfactory. The great advantage will at once be apparent that one does not see simply a small area of the bowel wall at the bottom of a long cylinder, but that a comprehensive view of its whole length and lateral surfaces is obtained, normal and abnormal tissues being at one glance made subject to comparison. That this is not an overdrawn description will at once be apparent when I state that I have repeatedly on the cadaver, male as well as female, introduced a suture with a common curved needle and tied it eight inches from the anus. This was done

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with an extra long needle-holder and the knots tightened with long uterine dressing forceps. This could not have been done unless the part was in full view and room enough provided for manipulation.

I wish here to call your attention to the danger of attempting a suture from any portion of the inner surface of the sigmoid. Although this can be done with ease eight inches from the anus, it is difficult to avoid carrying the needle through the bowel wall. It has happened to me twice, upon the cadaver, to sew two loops of bowel together, although I used the greatest of care. The procedure is safe in the rectum.

One great advantage of this method is that we do not have to grope our way blindly by the sense of touch alone, but the instruments are introduced under the guidance of the eye. If an obstruction is met, it is seen and the point directed by it. If there be a stricture or malignant disease, the field can be inspected, and the amount of diminution of caliber can be made out as one proceeds without any danger of undue force. The instruments are more easily introduced than cylindrical specula, because there being no obturator, the air precedes the point and balloons the bowel in advance.

It is often of advantage to introduce two of the long retractors instead of a short and long one.

It is needless to dwell upon the advantage of being able to examine ten inches of the lower bowel with almost the same facility that one inspects the vagina with a Sims speculum.

The location of fistulæ, the depth and caliber of strictures, the extent of malignant disease, the removal of polypi and the treatment of ulcers become simple procedures.

The confirmation of a diagnosis of intussusception in children and sigmoid volvulus may be possible. In one case of doubtful character in an adult, after heroic but futile efforts had been made to move the bowels, pain and vomiting being prominent symptoms, with a dull area in left iliac region, the introduction of one of these instruments to the depth of nine inches was followed by a gush of air and liquid fæces with immediate relief to the patient. In another case this speculum was of unexpected value. Having to close a large high rectovaginal fistula, which had been already operated upon four times unsuccessfully, the rectal opening being five and one-half inches from the anus, I stitched, as I supposed, using an ordinary Sims speculum, the edges only of the fistula, without freshening, as a barrier for the sutures on the vaginal side. Having completed the vaginal closure I tried to introduce a long speculum, in order to see if my stitches held in the rectal mucosa. I found that I had unwittingly entirely closed

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the lumen of the bowel by stitching in a loose fold of mucosa that lay upon the opening. This I corrected and the result was perfect. If I had not used the long speculum I should at least have had a failure and never have known what caused it.

It has occurred to me that in case of a low sigmoidal obstruction following an abdominal operation, the opening of the bowel in this way might afford relief. I have never had an opportunity to try it.

It is needless to remark upon the great care needed in making high rectal or sigmoidal examinations when the caliber of the bowel is reduced or the resiliency diminished by adjacent inflammations or tumors.

The first instruments I devised in 1892 had the groove of the Sims speculum. I found later that a straight flat surface gave just as good results, except in the largest sizes. The cost of the latter is slight compared to that of those with the groove.

These instruments are, as you see, only straight flat pieces of steel with four inches bent down for a handle. The handle can be made to fold down, if desired.

The sizes I have found most convenient are one twelve inches long and three-quarters inch wide; one ten inches long and one-half inch wide, and one eight inches long and one-quarter inch wide. I have occasionally used one eight inches long and one and one-quarter inches wide.

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TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, April 20, 1900.

The *President,* T. J. WATKINS, M.D., in the Chair.

Ectopic Pregnancies operated upon before Repture: The Significance of Intervillous Hæmorrhages in the Interruption of Ectopic Gestation.

BY C. E. MANIERRE, M.D., and MAXIMILIAN HERZOG, M.D.

(See page 155.)

DISCUSSION.

Dr. A. W. ABBOTT, of Minneapolis, Minn: I have been very much interested in the paper. I have noticed that in general the hæmorrhage almost always destroys the musculature of the tube, especially close to the fœtus. In all the sections which I have of tubes before rupture, that is quite marked. I have also noticed that the vessels of the peritonæum of the tube are very much enlarged in the neighborhood of the tubal pregnancy. While it has been said that the hæmorrhage is much more severe when rupture takes place below where the larger vessels are, I think, on the contrary, that the enlarged vessels are oftener on the top of the tube. I have noticed that repeatedly, and the vessels are so changed and large that they are distinctly visible to the naked eye. They form a perfect network if examined in the body before the circulation is interfered with.

I would endorse what the first speaker said in reference to early examinations of women. I remember mentioning that point in a paper I once read. I made the statement at the time that as so many cases of extra-uterine pregnancy occurred, every married woman who had a suspended menstruation should go to her physician and have an examination made. There are enough of these cases to make the condition a dangerous one, and I think that married women ought to be taught to go to the doctor in order to be examined just so soon as menstruations becomes suspended.

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Dr. CHARLES S. BACON: I do not know that I can say anything on this interesting point brought out by Dr. Herzog. I am not unfamiliar with the idea that intravillous hæmorrhage is one cause of the death of the fœtus and is the cause of the interruption of pregnancy, but it is certainly not the only cause of the trouble.

One point brought out by Dr. Manierre I would like to speak a word about, as it has been brought up many times in the Society, that is, the question of diagnosis. The hope of always getting an exact diagnosis by the examination of the uterine decidua we have had to give up, and yet the importance of the examination of the uterine scrapings was shown, for example, in the second case the Doctor reported, where but for the lack of this diagnosis might have been made much sooner. I believe that in spite of the fact that the subject has been before the profession for so many years it is still too much neglected. The presence of the decidua with the absence of villi makes the diagnosis certain, and is therefore in doubtful cases always to be sought for. The decidua probably can be secured for examination in every case with no more danger than attends a thorough bimanual examination which has often produced rupture of the sac. Where curetting is resorted to to obtain a specimen of the decidua, it can generally be done without anesthesia. Of course, absence of the decidua from the uterus after a long continued discharge proves nothing.

Dr. J. CLARENCE WEBSTER: I have listened with great pleasure to these papers and I think Dr. Manierre is to be congratulated for his thorough working-up of the clinical side of his cases and for the success with which he treated them. He has referred to the question of diagnosis in the early months and to the necessity of early operation. I suppose that he will agree that the diagnosis in the early months may be classed in the same grade of difficulty as diagnosis in later months. In regard to the method of bimanual examination. I have never forgotten what Olshausen used to point out, in his clinics, that the most skilled hands may miss entirely any tubal swelling not too great in size, if it contained fluid under low tension. I have recently seen two very interesting cases in which very early tubal pregnancy was not diagnosed in the early weeks, though a careful anæsthetic examination was carried out. In one of them rupture occurred as a result of the manipulations, and the operation disclosed an ectopic gestation.

With regard to the second paper, I think it is a most admirable contribution, giving an important emphasis to one factor, namely, the

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occurrence of hæmorrhage in the intervillous space. I would like to refer to an interesting case which I have had recently. There was a sudden pain on the left side three days before I saw the patient. She was sent to hospital, and a tubal swelling was found. She was operated on, and a tubal sac was found, the greatest diameter of which was about three-quarters of an inch. There was a small rupture and a very little blood lying in the utero-vesical pouch.. The case was one of ectopic pregnancy. The interior of the tube was a mass of fresh clotted blood. There was absolutely no fœtus to be found. That, at first sight, might lead to the supposition that the fœtus had been completely absorbed within three days. As I only received a microscopic section this morning, I have not been able to examine it very closely. Portions of the chorion frondosum show quite distinctly the findings described by Dr. Herzog, the degeneration of the villi and their epiplastic covering; fibrin and blood-crystals in the intervillous space. In all probability the hæmorrhage which occurred, causing the fresh blood in the tube, did not lead to the death of the fœtus, nor its disappearance, this being due to previous blood extravasation into the intervillous space, producing the changes referred to by Dr. Herzog.

Dr. STAHL: The large hæmorrhage was then secondary to the primary?

Dr. WEBSTER: Yes. I think Dr. Herzog is right in emphasizing this point, because it is rare that we get such early fresh specimens showing the results of slight hæmorrhages into the intervillous space.

In regard to the reason for the frequency of intervillous hæmorrhages, I think you will probably agree with me that it is probably due to the sinuses in the decidua being surrounded by such a small amount of connective tissue. Dr. Herzog has described the matting together of the fimbriæ of the tubal. In the early stages, that has been pointed out by me. A superficial compact layer may be produced by the matting of the plicæ which originally are very slender and generally contain a low embryonic form of connective tissue. The sinuses developing in this layer of the mucosa are not well protected, and it is therefore not difficult to understand how in conditions of increased intra-abdominal or blood-pressure there may be rupture. The study of ectopic gestation placentæ in later months shows the effect of hæmorrhages quite clearly. I do not suppose that anybody ever saw an ectopic placenta without changes of this kind, areas of degenerated villi surrounded by fibrin and a deposit of blood-crystals being common. I think that this is a very important point which Dr. Herzog has brought out.

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Dr. HERZOG (closing the discussion): I am very much pleased to see that my short report has excited an interesting discussion. I have not gone into any other point but the one I wanted to bring out quite especially. I did not enter into the discussion of the cause or causes of intervillous or secondary hæmorrhages. Dr. Webster suggested the most important cause. The small, thin tissue bridges between the tubo-placental sinuses are easily destroyed. I think this destruction may be brought about by the syncytium which possesses marked phagocytic properties. I want to speak about another point mentioned in the discussion, *i.e.*, the microscopic diagnosis of membranes or shreds passed from the uterus during tubal pregnancy. It has been a contested question whether a uterine decidua is formed in ectopic gestation. Dr. Ries, one of your members, with others, claims that such a decidua is formed. I can confirm that such is the case. I have had the chance to examine quite a number of scrapings in such cases, because Dr. Henrotin always obtained them in his operations for ectopic pregnancy whenever possible. Occasionally you find a complete uterine decidua, showing beautifully the compacta and the spongiosa. At other times you find no decidua. I have had one case furnishing an instructive illustration. It was one of tubal pregnancy, in which both tubes and ovaries, as well as the uterus, were removed and I took the pains to make sections through the whole uterus. It contained no decidua, but a uterine mucous membrane of a fairly normal non-pregnant type. In one part of the uterus I found still adherent some decidua which had not been shed, but which had been separated by a hæmorrhage. It was greatly degenerated. So, very frequently, when those cases come into the hands of the operator or come to post-mortem, or are curetted, the decidua has disappeared and the non-pregnant mucosa has appeared in its place. Hence the erroneous claim could have been made that a uterine decidua is not formed at all in ectopic pregnancy.

Examination of the Sigmoid Colon.

BY A. W. ABBOTT, M.D., Minneapolis, Minn.

(See page 166.)

DISCUSSION.

Dr. FERNAND HENROTIN: I can endorse fully the thanks we owe to the Doctor for being permitted to hear him tell of the value of his instruments. At the same time, I am gratified to say that al-

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though the Doctor has sent me a set of his instruments, I have not had the opportunity of using them. This may be due to my obtuse methods of diagnosis that I have not had more opportunities. These instruments are certainly of value under certain circumstances, but I believe that we can only reach a certain limited field of the bowel, although the Doctor's method looks feasible and in the hands of the proper operator it probably can be carried out. The Doctor has made experiments on cadavers for the purpose of determining as near as possible the exact length of the field which we can explore. The difficulty we meet has been the finding of the patient in whom it is a matter of importance to resort to these measures. I am positive that this work is a step in the right direction, and the instruments are an improvement over any instruments of the kind, especially those devised by Dr. Kelly. The advantages of going up the bowel beyond the limit of the rectum and sigmoid are very doubtful, even if we could by legerdemain or by skilful measures manage to put in stitches, as described by the Doctor. It strikes me that it might be difficult to determine the extent and character of certain diseases such as Dr. Abbott mentioned. Malignant diseases we can frequently determine the lower end of, but when we think of passing an instrument up eight or ten inches so that we can get the upper limit and recognize it, I may be mistaken, but I think we will find usually that the pathologic condition is such that it will not only be difficult but dangerous as well to find the upper limit. It is, however, considerable to be able to know that we can determine the characteristics of these diseases by sight with the use of these instruments. As regards the extent of usefulness of these instruments, I am not ready to give an opinion, as I have not had an opportunity to determine, and I may be a little wedded to the old methods without instrumentation.. I have the instruments and I hope some day to have an opportunity to verify some of the Doctor's hopes by my own cases.

Dr. Charles S. Bacon: I suppose that there is not one nurse in twenty in this city who does not believe that she passes the tube into the colon when she gives a high enema, and the nurses generally get their teaching from the physician. I suppose that there are many physicians who believe the same thing. It is not my intention to discuss how this belief has arisen and become so general but I simply allude to the well-known fact. Such observations as Dr. Abbott's are very good to correct this opinion.

The advice of Dr. Mathews, who gave us a paper last year, to rely mainly on the finger for the examination of the rectum, is to some

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extent in opposition to the advice of the author this evening. I believe that none of us will dispute that ocular examination added to digital examination is very important. Besides, we have cases where examination by the finger is dangerous, as in specific ulcers; therefore the popularizing of a method like this for examination is a matter of a good deal of importance. We are certainly much indebted to Dr. Abbott for bringing up such a paper.

Dr. T. J. WATKIN: I am reminded of two cases where Dr. Abbott's instruments would have been of great service. Both were cases of bowel obstruction due to carcinoma of the descending colon located just above the brim of the pelvis. With the aid of the instruments exhibited it seems quite possible that the obstruction might have been located and the patient relieved by lumbar colotomy which would have been a simple procedure compared to the abdominal section which was made. The specula will be of service in the examination of cases of recto-vaginal fistulæ.

Dr. ABBOTT (closing the discussion): The object of my paper was the discussion of the anatomical facts in reference to the examination of the descending colon. The use of the instruments is simply incidental. I have been using them for a long time, and they have been very useful to me, especially in cases such as I cited. I have used them in many cases which I did not mention, as that was not the object of the paper. I recall one case of stricture of the bowel about eight inches up in which I found that there was a stricture less than one-half inch in diameter and one-half inch long, and the Doctor very intelligently and persistently dilated, the patient getting well. There have been cases of ulceration of the bowel high up which I have seen and the physicians have treated them successfully by direct application to the ulcerated spots. I would endorse what Dr. Henrotin says in reference to the use of such instruments, as it is only occasionally that we have use for them, but when we do want them we want them badly. In diseases lower down an ordinary Sims speculum can be used to the best advantage. If a table is used that will tip the head down and the body up, you will be absolutely surprised to see the view which you can obtain of the lower sigmoid with these instruments.

Official Transactions.

C. S. BACON, *Editor of Society.*

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DEMONSTRATION OF CASTS USED IN OBSTETRICAL AND GYNÆCOLOGICAL TEACHING.*

By J. Clarence Webster, M.D., Chicago, Ill.
Professor of Gynæcology and Obstetrics, Rush Medical College.

I. Obstetrical.—The following casts were obtained from the bodies of women who died during pregnancy and labor. They are life-size reproductions and exactly represent the normal anatomical relationships during these periods. The third-month specimens were obtained by me from a case in which death occurred shortly after admission into the Royal Victoria Hospital, Montreal, from pernicious vomiting. The fifth-month specimens were made by me from a woman who died in the Royal Infirmary, Edinburgh, G. B., after operation. (A description of this case, along with drawings of the sections obtained after the body was frozen, has been published in my monograph, "Researches in Female Pelvic Anatomy," published by the Royal College of Physicians, Edinburgh. The casts illustrating the condition found at the beginning of the eighth month of pregnancy and in the second stage of labor were made from cases which were studied conjointly with Freeland Barbour of Edinburgh and myself and published by us in the "Laboratory Reports, Royal College of Physicians," Vol. II.

The casts made by Dr. William C. Lusk of New York were obtained from the body of the first pregnant studied in America by means of frozen sections. It was my good fortune to be able to study these sections during their preparation.

The following is the list of the casts demonstrated:

I. End of third month of pregnancy. Vertical mesial section of pelvis. Left half shown. Fœtus and liquor amnii removed. It is to be noted that the vera and reflext are not united, and that the placenta is partly reflexal. II. *a.* Beginning of fifth month of pregnancy. Vertical mesial section. Right half shown. Fœtus and liquor amnii removed. II. *b.* The same as II. *a.* Left half shown. II. *c.* Cast of amniotic cavity at beginning of fifth month of pregnancy. Note that it is pear-shaped, the thick portion being lowermost. III. *a.* Beginning of eighth month of pregnancy. Vertical mesial section. Right half shown. Fœtus and liquor amnii removed. III. *b.* The same as III. *a.* Left half shown. III. *c.* Cast of amniotic cavity at beginning of eighth

* Read. For *Discussion*, see page 186.

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month of pregnancy. Note that it is pear-shaped, the thick portion being uppermost. IV. *a.* Labor. Advanced second stage. Primipara. Vertical mesial section. Right half shown. Fœtus and liquor amnii removed. IV. *b.* Labor. Advanced second stage. Primipara. Vertical mesial section. Left half shown. Fœtus and liquor amnii removed. IV. *c.* Labor. Advanced second stage. Primipara. Cast of whole genital tract. IV. *d.* The same as IV. *a.*, the fœtus being *in situ*. IV. *e.* The same as IV. *b.*, the fœtus being *in situ*. IV. *f.* Labor. Advanced second stage. Primipara. Cast of fœtus removed from genital tract. IV. *g.* Cast of whole genital tract in above case.

The following casts were made by Dr. William C. Lusk, New York:

V. *a.* First stage of labor. Premature. Multipara. Vertical mesial section. Right half shown. Fœtus and liquor amnii removed. V. *b.* The same case. Vertical mesial section. Left half shown. V. *c.* The same case. Cast of amniotic cavity. Note: The shape of this cast indicates that the woman probably died during a period of uterine contraction. V. *d.* The same as V. *a.* Fœtus *in situ*. V. *e.* The same as V. *b.* Fœtus *in situ*. *V. f.* The same case. Cast of fœtus removed from uterus.

II. Gynæcological.—The following casts illustrate various pathologic conditions and operative procedures. I modeled these first of all in sculptor's clay and afterward had them cast in plaster. Then I painted the latter in oil colors. The value of these casts, in giving instruction to students, being nearly exact reproductions from nature, is very great. The following is the series exhibited:

A. 1-2-3-4. Stages of operation for repair of perinæal tear extending into rectum. B. 1-2-3-4-5-6-7-8. Stages of operation for total extirpation of uterus by vaginal route. C. 1-2-3-4. Stages of operation for carrying out a high amputation of cervix in a case of prolapsus uteri. D. 1-2-3-4. Stages of procedure in Martin's amputation of cervix. E. 1. Prolapsed and retroflexed uterus. E. 2. Prolapsed and anteflexed uterus. F. 1-2. Repair of laceration of cervix. G. 1. Prolapsus uteri and cystocele. H. Anterior colporrhaphy. I. 1-2-3-4-5. Repair of partial rupture of perinæum. J. 1-2-3-4. Stages of operation for repair of perinæal tear extending into rectum. K. Posterior colporrhaphy (Martin). L. 1-2-3. Various methods of carrying out colpoperineorrhaphy. M. 1. Operation for small vesico-vaginal fistula. M. *2a-2b*. Operation for medium vesico-vaginal fistula. M. *3a-3b*. Operation for large vesico-vaginal fistula. M. *4a-4b*. Operation for very large vesico-vaginal fistula. N. Anterior colpotomy.

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TRAUMATISMS OF THE BLADDER AND URETHRA DURING LABOR, AND THEIR SEQUELÆ.*

By Gustav Kolischer, M.D., Chicago, Ill.

In this paper I am not going to discuss the very well-known major injuries of the bladder and urethra, as lacerations of the urethra or the origin of vesico-vaginal fistulæ, but I will confine myself to the discussion of those traumatisms which are less investigated and consequently less known, because they do not produce any external wounds.

The urethra gets injured during labor by being directly bruised or by being bent through the descending of the fœtal skull.

The first takes place especially when the anterior cervical lip becomes the seat of œdema or of a hæmatoma, so that the urethra is squeezed between this lip and the symphysis. Here we have to differentiate two kinds of consequences: the direct ones and the indirect, remote sequelæ.

The direct consequences are fairly extensive hæmorrhages into the urethral mucous membrane and the reactive swelling of the urethral walls: by the injuring of the epithelial lining a permanent desire of urinating is caused, the obstruction of the canal produces retention, and catheterism becomes necessary. In such cases an extremely gentle catheterism performed with appropriate instruments is paramount. The catheter has to be carefully lubricated, which usually is omitted, and it has to be introduced under the control of a finger placed in the vagina. The catheter should be a straight one, with a very slight curve at its vesical end; its eye ought to be situated in the center, and its tip should be carefully polished.

I would not like to let this opportunity pass by without cautioning against the usual female catheter. These catheters have two curves: one at the distal and one at the vesical end. This construction leads directly to injuries of the upper urethral wall, while laterally situated eyes are of the following disadvantage: The mucous membrane in the above mentioned cases is not only swollen, but becomes movable towards its base, and so it might very easily happen that a fold gets

* Read. For *Discussion*, see page 186.

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entangled in one eye of the catheter, and becomes torn when the catheter is pushed forward. The same reason holds good in excluding all rotary movements of the catheter. The indirect sequelæ of this labor trauma are the lesions of the sphincter muscle and the secondary changes in the urethral walls due to the further pathologic process. In such cases the sphincter muscle as a rule succumbs to a traumatic paresis, which usually spontaneously recovers. The decursus is that at first an absolute incontinence prevails, later on a relative incontinence only is present; that is, the urine escapes only under efforts of the abdominal muscles, as in coughing or laughing; finally the complete continence is restored. In case the relative incontinence should drag along for a considerable time, electricity will furnish restoration. It is to be noticed that such incontinence appears with great intensity in individuals who suffered during their early youth with enuresis nocturna.

If the suffusions in the urethral walls are not reabsorbed, but should become organized, the subsequent shrinkage of the connective tissue is able to produce quite extensive strictures. Quite often it is possible to prevent their development. If it is observed that after two weeks post-partum these infiltrations are still present, sounds of gradually increasing size are to be introduced and an energetic massage upon these sounds has to be applied. In case strictures of this kind have already developed, we achieve satisfactory results by sounding, which has to be carried on until the whole urethra is again soft, elastic and flexible. A peculiar kind of stricture develops when hæmorrhages into the sphincter muscle have forced apart its tissue. This causes often a myositis, which in turn produces a cicatrizing contraction, terminating in a narrow stricture at the internal orifice. Those strictures reply to dilation by bougies with extreme soreness, urethral fever, and considerable nervous reaction, and can only be removed by urethrotomy.

All the urethral lesions caused by squeezing are most likely to occur in cases of simple flat pelves. The urethra may become kinked, when the descending fœtal part carries down the posterior urethra, thus doubling up the urethra. Inasmuch as the anterior fornix post-partum does not appreciably retreat, ischuria sets in, which has to be stopped by replacing the tuberculum urethræ and by inserting a catheter, which procedure has to be controlled by placing one finger in the vagina. Thus the urethra is straightened out and the free passage of urine becomes secured by repeated catheterism. Another variety of urethral incontinence occurs if the lower urethral wall only is carried downward; this happens most likely in forcible forceps opera-

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tions, whereby the vaginal fornix is very rapidly dragged down; whereby the urethra becomes funnel-shaped, the larger aperture looking toward the bladder. The posterior part of the urethra being thus distracted, gives rise to absolute incontinence. The recognition of this condition is particularly important, because prompt intervention soon restores normal functions, while overlooking it and indifference renders the incontinence permanent. The urethral sphincter very rapidly loses its functional power definitely and does not regain it, having been inactive for a certain time. After having established the diagnosis by ascertaining the lowering of the anterior fornix and by the absence of any resistance at the internal orifice when introducing a sound, one has to replace the fornix and has to support the posterior urethra by inserting a hard annular pessary into the vagina. The sphincter muscle recovers now rapidly, and the pessary is removed after the involution of the genitals has made sufficient progress.

This condition, if neglected, leaves the distraction of the posterior urethra unchanged, the sphincter loses its functional power entirely, and the incontinence remains even after the involution of the genitals is completed. This incontinence being the result of the retrograde dilation of the urethra, we cannot expect a cure from procedures usually employed, like sounding or the appliance of electricity; an operation is the only means of restoring normal functions; such operative methods are the incision after Fritsch or Gersuny's twisting of the urethra. I would like to say that all forms of urethral incontinence in puerperio assume great significance on account of the deficient sphinctereal function, which enhances the danger of infection of the bladder.

The effect of puerperal traumatism to the bladder may be divided in two groups: the traumatic desquamative catarrh, and the dislocations of the bladder.

By investigating a great number of cases I was able to prove that there is always a pronounced œdema in the bladder during labor, favoring the desquamation of the epithelial lining through mechanical insults. Or hæmorrhages into the mucous membrane, produced by violent pressure on the bladder, occur. The epithelium covering these spots is always thrown off and is not regenerated before these hæmorrhages are entirely absorbed. Such losses of epithelium cause the patient the sensation of heaviness and soreness in the bladder and tenesmus; the urine appears turbid, sometimes so much so that it looks like milk. The common diagnosis in such cases is cystitis, and astringents or caustic solutions are injected, much to the harm of the pa-

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tient. One should not diagnosticate cystitis in such cases unless pus is found in the urine. In the cystoscopic view these desquamative catarrhs characterize themselves by the fact that around the denuded spots no signs of reactive inflammation can be found. It is best to leave such bladders alone; only in extremely painful cases iodoform instillations may be satisfactorily employed. Astringent or caustic injections serve only to irritate the mucous membrane deprived of its epithelium, and cause the patient considerable pain, without furnishing any benefit.

Traumatic dislocations of the bladder are produced by the descending fœtal skull, especially in operative cases, whereby the bladder is torn from its seat and dragged downward. These dislocations vary according to the degree or the totality of displacement. In those of a lesser degree we find the bladder but slightly dislocated, so that, so to speak, a rapid artificial cystocele is produced; the difference between these and the slowly formed cystocele consists in that, that in the latter the bladder cavum is always enlarged, while in the former the size of the viscus remains unchanged, the cystocele being formed at the expense of the fundus.

If the trigonum is not dislocated so far downward, incontinence does not occur, but the patients suffer from ischuria until an adequate functional hypertrophy of the bladder walls develops.

When the trigonum sinks very deep, all consequences of the distraction of the posterior urethra appear.

In extreme dislocations the bladder is completely torn from its seat and entirely dislocated downward, so that its body rests against the portio-vaginalis. In such cases complete incontinence occurs.

Three years ago I happened to examine a classic case of this kind. The patient was referred to me for examination by Schauta on account of her bladder troubles. A physician had applied a high forceps several months before and incontinence developed right after the delivery.

The examination gave the following conditions: The bladder had entirely dropped down into the vagina, resting against the portico-vaginalis; upon introducing a cystoscope in the bladder distended by fluid, the latter appeared as a glowing globe in the vagina; the endovesical examination showed that the urethral canal as such did not exist any more, but the bladder appeared like suspended to the external urethral orifice, while the distracted urethra without any visible border passed over into the corpus vesicæ. I will report later on the therapeutic measures employed and its result. Here I only wish to say that these dislocations of the bladder are also significant on account

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of the displacement of the trigonum and the lesions to the subvesical tissue, which may bring about bending of the ureters and subsequent dilatation above the place of obstruction, a complication in which a recent publication of Dudley of Chicago has thrown some light.

It is evident that the therapeutic management of this dislocation can only be an operative one. The bladder has to be dissected from its new layer, has to be replaced into its normal region, and there to be secured by sutures closing the wound in the cervix and vagina.

When, in spite of this replacement, incontinence persists on account of atrophy of the sphincter the above-mentioned urethroplastic operations have to be resorted to.

In case of the bladder descensus being complicated with genital prolapsus, the plica vesico-uterina has to be opened, the bladder pushed back over the fundus uteri, so that the latter, as Schauta calls it, carries the bladder on its back.

In the case which I have reported above, Schauta made a hemicircular incision of the portio-vaginalis, dissected the bladder out, replaced it and secured it in its position by suturing the vaginal incision. The urethra regained its normal shape, but the sphincter muscle not its functional power. A secondary operation, Gersuny's twisting, effected continence.

Searching for the cause of these displacements, and for the measures to prevent them, we find almost invariably that these dislocations have been preceded by forced forceps applications, in particular by a high forceps. This is easy to understand if we consider the conditions under which a high forceps is applied and the way in which the high forceps operation is so frequently carried out. The lower soft parts are not prepared, the skull is not moulded yet, and not rotated. If, then, as it frequently happens, the head by few tractions and rapidly is brought down to the pelvic floor, the soft parts become seriously injured by the skull, not sufficiently rotated, pressing with the pars squamosa against the bladder, and in this way dislocation of the latter is easily accomplished. Therefore, we have to proceed very gently, especially with the high forceps. The high forceps has to be unlocked after each traction, and some time should elapse before the next traction is attempted; in this way the soft parts are gently and slowly stretched, and the head has got a chance to be moulded and to rotate.

These conditions furnish another reason for preferring the Breus axis traction forceps, which allows of more free mobility of the head, before the French axis traction forceps.

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TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, May 18, 1900.

The *President,* T. J. WATKINS, M.D., in the Chair.

Demonstration of Casts used in Obstetrical and Gynæcological Teaching.

BY J. CLARENCE WEBSTER, M.D.

(See page 179.)

Traumatisms of the Bladder and Urethra During Labor, and their Sequelæ. (Inaugural Thesis.)

BY GUSTAV KOLISCHER, M.D.

(See page 181.)

DISCUSSION.

Dr. L. FRANKENTHAL: I have been very much interested in the paper, and wish to thank the essayist for its presentation. I must confess my ignorance of the fact that the bladder can be subjected to so many conditions as Dr. Kolischer has described, especially the case he mentioned in which there was no meatus left. Those are all novel conditions to me and I feel that we ought to use the cystoscope more than we do.

Dr. CHARLES S. BACON: This collection and classification of the less commonly recognized urethral and bladder troubles is very interesting. If I were to express any criticism of the paper, it would be the lack of a rather more extended and detailed description of the methods of diagnosis. Of course, a paper cannot contain everything, and that is probably the reason of this deficiency. The different conditions that were described and the methods of diagnosing them, are certainly interesting and valuable.

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In regard to the etiology of the displacements of the bladder, the question naturally arises whether the extrication of the after-coming head may not also be a rather important factor. I would suppose that the rapid extraction would lead to the same trouble as in the case of the presenting head. As Dr. Kolischer has given this subject so much time and study, I would like to ask him whether he has any statistics to show how many cases of displacement are due to the use of the high forceps, and how many occurred during extraction. I would further ask him to make more plain the reason why the Breus forceps is preferable to the Tarnier or the Murray. It is the improper direction of the applied traction that causes the danger to the bladder and urethra. I doubt if it can be successfully claimed that the Breus is a more perfect axis-traction forceps than the other mentioned models.

Dr. FRANK B. EARLE: I merely wish to make an inquiry with reference to the passing of the catheter, as I do not know whether I understood Dr. Kolischer correctly. Did he mean to say that the catheter should be passed along the guiding finger, or whether the labia should be separated and the catheter introduced by sight?

Dr. EMIL RIES: The doctor mentioned that in certain cases parts of the bladder become denuded of epithelium, and that this epithelium is found in the urine, making the urine appear turbid. I would like to ask whether in these conditions he got his material by removing parts of the bladder or merely by a microscopical examination of the urine.

Dr. KOLISCHER (closing the discussion): I desire to thank the gentlemen for their kind reception of my paper. I admit that Dr. Bacon's remarks were justified, that he missed some diagnostic points in my paper, but I hope that he will have an opportunity to hear that phase more fully entered into at a subsequent time. In regard to bladder injuries following extraction of the after-coming head, I saw only one case in which the bladder was torn out. It was where the forceps was applied to the following head, when we cannot rotate the head as well as when we use the hands. The bladder was pressed against the symphysis and torn out of place.

The superiority of the Breus forceps over the Tarnier can, I think, be answered in this way. The Breus forceps allows the head greater mobility; the head is pulled down, but it can rotate very easily, and it is not forced as when you employ the Tarnier traction forceps. If the axis of the forceps blade does not correspond with the axis of the pelvis, we always compress the head very badly or injure the maternal parts. That is the reason most of the German physicians have aban-

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doned the Tarnier and are using the Breus forceps. It is used by preference by most of the obstetricians in this city.

Dr. Earle misunderstood me; I did not recommend that the finger should be used in all cases—only where the urethra is bent. If we do not introduce the finger and control the vesical neck of the bladder, we do harm. I am very well aware of the danger of manipulating inside the genitals post-partum. I would rather put on a rubber glove or a finger cot when introducing my finger into the vagina, than to injure the already swollen urethra.

The microscopical examinations of all the specimens of bladder catarrh were conducted in Dr. Weichselbaum's laboratory in Vienna, and as the results did not belong to me I could not publish them. I may say, however, that Weichselbaum confirmed my statements by microscopical examinations of the urine.

Official Transactions.

C. S. Bacon, *Editor of the Society.*

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SOME LOCAL NUTRITIVE INFLUENCES IN THE PELVIC DISORDERS OF WOMEN.*

By O. B. Will, M.D., Peoria, Ill.

I should hesitate to present to this learned body anything short of the profoundest dissertation possible, were it not for a realization of the fact that our everyday thoughts and acts occupy so large a space in our professional lives as to reflect more accurately than all else the springs of our professional success, and consequently merit occasional voice even though they seem commonplace. Nothing more than simple routine can be claimed for what the writer has to say; and yet in a practical way it has been to him of more real value than many of the ultra refinements of diagnostic and therapeutic skill. Reiteration and suggestion are in themselves forces of no mean value, and make for a consolidation of right principles and practical truths. In the present instance, therefore, the writer will have accomplished his primary purpose when he has formulated his convictions respecting a theory and a course of action, even though both may have been long since practically recognized by others.

The method of the Virginia doctor of the olden time, who hung his negro slave patients up by the heels and poured their vaginæ full of decoction of tan-bark, typified in most essential particulars the efforts of the present day to correct the common disorders of the female pelvic organs. It practically recognized much of the true pathology, and has its counterpart in the modern positional treatment, massage and tamponade. The conditions of engorgement, inflammation, misplacement, and hyperplasia, although not then as now looked upon merely for what they are worth as secondary factors in the morbific entities of malnutrition and infection, were at least accepted as matters of fact, and handled under the philosophic dicta of experience.

Under the aforementioned phases of ætiologic knowledge a somewhat different aspect of affairs is presented. The prime factors in

* Read. For *Discussion*, see page 214.

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ocular and tactile demonstration yet exist, but the theories of their genesis and details of management are adapted to the latterly discovered unities of origin.

It is the object of this paper in the first place to add a mite of personal testimony in maintaining the theory that the female ovary furnishes a product concerned in modifying the tissue-forming processes of the general system during the mid-period of life and more markedly of the tissue anabolism of the generative organs themselves, and by virtue of structural continuity and ease of transit of that of adjacent parts, thereby rendering them peculiarly susceptible to the morbid changes so constantly observed; and in the second place, to assist in formulating a course of treatment in consonance with this view and more directly and specifically efficient in correcting the consequent aberrations of structure and function.

The hypothesis of the ovarian origin of a *morbus causa* is not at all unreasonable in the light of ascertained facts. If there is one thing more patent than another to the ordinary clinical observer in this class of cases, it is that there are certainly present in the locality involved determinative influences of some sort largely independent of, and in some sense foreign to, those of other organs of the body. Influences that differ in quantity and activity if not wholly in character, from any elsewhere operative in the economy. If this is true, a working conception of such forces must be of grave and vital importance, and we should endeavor to know them.

While an application of the law of physics has given some insight as to the etiology of morbid pelvic conditions in women, there yet remains much for definite and satisfactory determination. In the more ultimate line the indications are that biological chemistry is destined to give, as it has already in some measure given, much valuable aid. Researches into the production and character of chemico-physiological substances and their influence on metabolism, only serve to confirm the suspicion of acute clinical observers, that Nature provides herself with some direct, active, nutritive influence on the organs immediately concerned, quite in harmony with her major reproductive designs, and whose perversion in point of character or intensity is often the occasion of untoward and disorderly results: results not only immediate, but remote as well, in constancy and significance. It seems unreasonable to suppose that the mere development of an ovum—a differentiated cell—can produce so marked an impression, and such a profound disturbance in its somewhat extended vascular and neurotrophic area, through the ordinary channels of excitation, however

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multiplied and highly developed. The characteristic influx of hyperactivities cannot be accounted for on any ordinary physiological grounds. The development of the male element is not accompanied by any such profound disturbance of the nutritive forces, and purely anatomical, geographical, and reflex considerations are insufficient to account for either the wild perturbation of local forces prior to the cessation of ovulation, or the quiescence and retrogression which succeed to that period.

To the clinician, therefore, it would seem that there must be some specific exciting cause for these disturbances, born with their instigation, and independent of the common neurovascular attractions of an independent growth, however intimately the latter may be anatomically associated with the affected tissue area. The discovered facts of biologic science, such as before reverted to, are daily pointing more and more emphatically to the influence of chemicovital products on tissue genesis. Such is the case even in the ultimate sphere of cell-proliferation in early generative lines, and there is nothing improbable in the deduction that localized influences of the kind may intensely modify nutritive activities and products within the scope of the immediate vascular and nervous connections of the reproductive organs of woman.

It is the assumption of the writer that the engorgements, the hyperplastic, and hypertrophic conditions so constantly found to imperil the integrity and functional activity of the female pelvic organs are largely due to such an extranutritive impulse of material character direct from the ovaries. It is assumed, from clinical evidence as well as biologic analogy, that this impulse acts upon the local circulation, and through both the local and general neurotrophic connections, but expends a much larger proportion of its energy upon the former. While the systemic disturbances are usually such as to indicate, by a common symptomatology, the evolution of an exciting product of what may be called the toxicophysiological type, there is in these local activities evidence of a predominant local irritant. From the period of puberty to that of the so-called climacteric, indications, as stated, are abundant that the female organism is under the influence of such an agent, whose genesis is co-extensive and co-ordinate with this same interval limit. Not only is this demonstrated in a subjective, but in an objective way as well. And at the same time the origin of the principle is thereby definitely and conclusively traced to the functional activity, or at least metabolic tissue change, of the ovary itself. Any one who has witnessed the marked effect in some cases

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of the administration of ovarian extract, in attempt at immunizing more gradually against the disturbances of too sudden interruption by operation, of the equilibrium normally sustained, by the organic product under discussion, can but have recognized not only the immediate relationship of cause and effect, but an evidence of the subtlety and certainty and near-reaching as well as far-reaching import of this organic emanation in the vicissitudes of female existence.

It was an acceptance of the theory of the pathologic attitude of this specific ovarian principle that led the writer to a fuller consideration of its real influence, and the best means of eliminating the associated morbid elements present in the female pelvic organs, and supposed to be connected with it in an ætiologic way. In this attempt the long recognized grosser elements could not be profitably overlooked. The mechanical influences found to obstruct and retard elimination were to be taken into consideration as factors of both pathology and therapeutics; in the former instance serving to concentrate the irritant principle to a narrow field of operation, and in the latter connection to serve, by their inversion, the purpose of diminution.

To one who has not given the subject practical and systematic attention it is marvellous how much for improved nutritive conditions can be accomplished by position and mechanical stimulation. Authors have from time to time reverted to these expedients, but surely without creating much enthusiasm in the professional mind. The writer feels constrained to believe that there are no measures more constantly misconceived and more wrongly applied. In all the congestive, inflammatory, and hypernutritive conditions of the pelvic organs, the pathologic influence of *position* is of the greatest importance. Therapeutically it may be made a factor of equal value. The force of gravity is a telling one in this respect as it is in the pathology of the parts. Its *maintenance* has been the difficult problem in connection with its utilization. After much experience the writer is impelled to value highly a proper resort to the necessary measures involved. In referring briefly to the salient features of these therapeutic allies he wishes to say that no specially tiresome attitude can be acceptably insisted upon or efficiently resorted to. That best adapted to conserve all vital interests in these respects is the one in which the patient is placed in the left or right lateral position on an adjustable chair or table. This is then exaggerated by lateral inclination and inversion to the greatest extent consistent with the maintenance of the position and perfect relaxation. To many patients this is really a great comfort, and its continuance for a considerable time alone a valuable

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preparatory procedure in anticipation of the subsequent details of treatment. Following this up by manipulations of the massage type, while standing at the back of the patient, who is freed from all compression of clothing, a finger or two, say of the right hand, is introduced into the vagina while the left is placed firmly upon the lower abdomen, so as to admit of grasping, or at least compressing, the fundus of the uterus through the intervening tissues. In this way, if no adhesions exist, the uterine body can, as we all know, be raised out of the lower pelvis, reposited if retroverted, and, in short, made to assume any position desired. These are simple facts connected with everyday experience, but their significance is seldom duly appreciated in connection with the possibilities they involve through continuance and repetition. It is not this condition of mobility that alone renders the usual system of massage applicable to the therapy of the pelvic organs, but freedom from adhesions is a very essential feature for the best results whether the influence of position is mainly sought or not.

Local massage is a therapeutic measure of the greatest utility in many of the discordant pelvic conditions in women. Its effect upon the nutrition of the parts is, of course, the essence of its value. The implied division into the mobile and the fixed tissue-condition marks largely the dividing line of practical procedure. In both instances the position of the patient should properly be that described. All efforts demand the utmost attention to aseptic conditions. Given these, the aim in the first place should be to encourage circulatory activity. As in general efforts of the kind, this can be best secured by stroking movements, directed in accordance with the anatomical status of the parts. With well-anointed fingers and moderate pressure the first movements are against the vaginal walls from the introitus vagina to the latter's vault, throughout the circumference of the canal. The cervix uteri is then seized between the finger tips and subjected to repeated pressure. While firmly held down by the hand over the fundus, the uterus is stroked upward and outward into the broad ligaments, and into those anteriorly and posteriorly, alternately. After a rest of five minutes for relaxation the movements are again made in similar order, and repeated for three or four times at each séance.

Under circumstances of more or less exudate and fixation the manipulations must partake of a somewhat different character. Instead of the stroking movements, with their resiliance of response, there is demanded rather a series of deep pressures and borings, so to speak, into all the involved tissues, for the purpose of mechanically

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changing the relation of their minuter structural elements, breaking down adventitious tissue and promoting retrograde metamorphosis of all redundant organization. This requires a perceptive tact of no mean quality, as the movements must in nature and force be commensurate with and adjusted to the degree of sensitiveness existing, and may be accomplished not only with the finger tips internally, but in the case of deep vaginæ or fleshy patients may be materially enhanced by mechanical appliance, such as a small ball on a long, stiff handle, as some of the forms of vaginal electrode. This may be lightly covered with moist cotton, to make it a little more elastic, and then anointed with vaseline for the purpose. The degree of resistance can be estimated, and necessary counter-pressure secured, by the hand externally over the lower abdominal region.

But after all, the manipulations thus briefly described and generally recognized as of much value in modern therapy are merely incidental features to the main object of this paper, which, as intimated in the expressed views of ætiology, is aimed to aid in pointng out some agency or agencies whereby to neutralize the assumed active, specific determinant of local blood stasis and morbid tissue metabolism.

In connection with experiments in this direction the first active principles or influences to suggest themselves were those known to control the menstrual flux. The most prominent of these were galvanism and the salts of iodine, both of which are known to be capable of indefinitely arresting the discharge accompanying ovulation, whether or not the latter function is itself materially interfered with. At all events, the combination seemed to promise most and to be worthy of an extended series of experiments in a purely local way, and a couple of years' close observation of results has enabled the writer to draw some conclusions and entertain some decided opinions respecting the method and consequences of their systematic use. To say that the results have been *entirely* satisfactory in all cases would be putting it too strongly, but to maintain that they have proven highly advantageous would but illy express the feelings of the writer, and those of scores of his patients who consider themselves absolutely well, and whose freedom from suffering and ability to attend to all the duties of life in comfort after having been for years consigned to chronic invalidism, justify them in the assumption.

The routine method to which the writer refers is as follows: The patient is placed in the favorite position for massage before alluded to. That feature of the demands of the individual case having been attended to as described, the uterus is exposed by the Sims speculum,

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and into the interior of that organ is passed by means of the intra-uterine syringe about one dram of a two- or three-per-cent. solution of cocaine, followed in five minutes by an equal quantity of a saturated solution of potassium iodide. No attack of uterine colic follows this procedure. Into the vault of the vagina, and closely about the pendent portion of the cervix, is packed absorbent cotton saturated with the same potassium solution, the whole covering well the presenting parts. Against this is placed a small carbon electrode lightly covered with cotton. This is attached to the anode, the spongiopiline pad over the abdomen in the usual manner, supported snugly by compress, representing the cathode of the battery. Twenty to forty milliamperes of current are then applied and continued for full half an hour, and sometimes twice that. The cotton is then removed and the upper portion of the vaginal cavity packed with dry antiseptic wool, to remain for two days. This treatment is repeated once in five days, for three successive times, and then once each week for an indefinite time, depending upon the exigencies of the case, and subsequently once a month, one week or eight days prior to the menstrual period, for possibly several months, or even a year under particularly bad conditions.

This, then, represents virtually the sum total of the writer's technique, and after an experience of nearly three years he is ready to estimate the value of results. It would be pleasing to him, were it not superfluously unnecessary at the present time, to give in detail the history of a few cases in evidence. Suffice it to say, however, that he would not now abandon this course of treatment for any other thus far definitely brought to his notice. The results have been eminently satisfactory, and whether they serve or not to sustain the theory of a localized material morbid excitant of ovarian origin, the treatment has accomplished the neutralization of the disturbing element and crippled its evolution so markedly as to maintain for a lengthy period a state of innocuousness. Certainly there has been obviated any concentration of its influence on local nutritive demonstrations, and the latter have become orderly and quiet. How much of this has been due to the electric current's metabolic action, and how much to the affinities of the iodide, the writer is unable at present to compute. Skepticism as to the efficacy of the former had become so rampant that nothing short of a miracle could induce some people to withstand the odium of its use, but the fact remains beyond all cavil that the combination of electrochemical energy, anodal diffusion, and the iodine has succeeded, where all other means failed, in producing apparently such an intra-

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cellular readjustment of atomic composition as to regenerate nutrition of all the concerned tissues and reëstablish their functional activity and prestige. Under the treatment instituted as described a katabolic change has been confidently surmised, to the verge of a tenuity commensurate with the merely physiological demands of the structures and functions evidently reëstablished that had lain dormant for a long time. Under the course of treatment referred to the uterine tissues, firm as they usually are under hyperplastic conditions, become softer and more resilient and the organ itself lighter. The tissues of the adnexa partake of this change, as do all the associate and adjacent structures, and particularly those of adventitious nature; adhesions and exudates. Inflammatory changes in the mucous membrane are likely to disappear, as do most certainly those of localized peritonitis, as well as the local soreness and pain. The local sensory as well as neurotrophic conditions improve in tenor, and have a delightful influence upon the subjective sensory evidences of nutritive improvement.

Finally, while the claim that the aberrations of local health herewith considered, as induced or aggravated by some metabolic ovarian excitant, evolved under stress of functional demands, may be questioned, the improved conditions unquestionably following the course of treatment alluded to, indicate one of two things: Either the existence of such, and its neutralization by the means adopted, or else an effect of the latter upon the local neurotrophic system, sufficient in kind and force to counteract the anabolic influences of the central and reflex nervous systems. The writer is of the opinion as before maintained, that the changes induced pro and con have their pivotal basis in a material impulse of ovarian origin, and that the improvements noted are the result of a chemical decomposition and prolonged alteration or restraint of the toxicophysiological principle normally evolved. The so-called alterative effect of the iodides when administered internally is generally recognized, even if not understood, and when administered in the manner described their effect is doubly marked in a local and somewhat different way. So marked indeed is it as to lead the writer to infer that in this particular sphere their action is not only of the character which commonly maintains, but more affined, direct, and with a promptitude, certainty, and tenacity that argue the greater likelihood of a specific, neutralizing influence over some element that is a habitat, so to speak, of the immediate zone of disorder. An element that is more of a local irritant and stimulant of hyperplastic activity, with its concomitants of hyperesthesia, engorgement, inflammation, and exudation.

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URETERO-INTESTINAL ANASTOMOSIS AND ITS PLACE IN PELVIC SURGERY.*

By Reuben Peterson, M.D., Chicago.

In this day of advanced and scientific surgery, it requires more than the mere description of a new surgical procedure to assure its thoughtful consideration by the experienced surgeon. The surgical world is slowing down a bit and is not so apt as formerly to be carried away by those who devise three times a day and at bedtime a new operation or a new technique for an old operation. The burden of proof is now laid heavily upon the advocate of the new procedure and he must show, either by clinical results or experimental work, good and sufficient reasons for the faith that is in him. Especially must those advocating such an intrinsically dangerous operation, as the permanent union of the urinary and digestive tracts show that these dangers can be overcome by perfection of technique, if they hope for the general adoption of their proposed methods of operating.

It so happens that most of the experimental work on uretero-intestinal anastomosis in this country has been performed in Chicago and by members of this society. Hence I have no hesitancy in stating wherein and why my conclusions differ from theirs. It is my hope that they in turn will criticize my views as frankly since oftentimes much more can be brought out by free discussion than by a written communication.

The urinary and digestive tracts below the pelvic brim may be united permanently in three ways:

1. The ureters severed from the bladder may be anastomosed with certain portions of the intestinal tract, preferably some segment of the large bowel.

2. The anastomosis may be accomplished by implanting in the intestine the vesical trigonum with its ureteral orifices.

3. The ureter-intestinal union may be established by the formation of a permanent communication between bladder and rectum in the male and between bladder, vagina and rectum in the female.

Where the last two methods of anastomosis are employed, it is evident that not only are the vesical ureteral orifices preserved, but the natural course of the ureters in the bladder wall remains unchanged.

* Read. For *Discussion*, see page 214.

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On the other hand, where the severed ureters are implanted in the bowel, new ureteral orifices must be formed. These facts must be kept in mind, since they will be found all important in determining the place of uretero-intestinal anastomosis.

1. Intestinal implantation of the severed ureters.

This is a procedure which would be extremely useful to the pelvic surgeon if it could be employed with safety. In primary or secondary malignant disease of the bladder, the entire organ could be removed and the ureters implanted within the colon. It could be employed for enlarging the field of the radical treatment of uterine cancer, which had extended into the broad ligaments. Uretero-uterine or uretero-vaginal fistulæ where, for any reason the ureter could not be anastomosed with the bladder, could be implanted in the bowel and the patient freed from a most distressing condition. Finally the indications for its employment could be still further extended to the cure of exstrophy of the bladder and to the relief of the distressing sequels of hypertrophied prostate. But can it be employed with safety?

Some two years ago a most interesting case of sarcoma of the bladder in a negress was referred to me for operation. Having under contemplation a total removal of the bladder, in order to ascertain the best methods of disposing of the ureters, I began a series of experiments in dogs on bilateral ureteral implantation. These experiments were carried on at intervals for eighteen months and were reported in detail at the last meeting of the American Gynæcological Society. In addition to my own experiments I made an extensive study of the literature of uretero-intestinal anastomosis and the conclusions arrived at from this review were included in the article mentioned, which will shortly be published in the *Journal of the American Medical Association.*

From an experimental standpoint the operation of bilateral ureteral implantation is a dismal failure. The primary mortality is over 85 per cent. in 68 dogs subjected to this operation by different experimenters. My own results were but slightly better, since I was able to save but 5 dogs out of 28 operated upon. The animals died from acute peritonitis from a giving way of the stitches at the site of the anastomosis or from renal infection of an acute ascending type. There is absolutely no proof that a single dog surviving the operation escaped infection of the kidneys. Dr. Martin and I have been fortunate in having the benefit of Dr. Zeit's careful bacteriologic and microscopic work. This has shown infection in all cases whatever the technique employed. The animals surviving the operation died from an acute suppurative pyelonephritis

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or from a pyemia from secondary infection. In a few cases the animal was able to overcome its infection with resulting contracted kidneys.

I fail to understand how any one can see any place whatever for the operation of bilateral ureteral implantation in human surgery, if his opinion be based upon experimental results—which may be summarized as follows:

1. The vast majority of the animals operated upon die from the operation itself, either from acute general peritonitis or an acute septic nephritis.

2. The animals surviving the operation usually die from an acute ascending pyelonephritis, or from pyæmia from secondary infection.

3. In a very few instances, they overcome the infection and survive with resulting contracted kidneys.

4. As one could expect when a small compressible tube like the ureter is implanted into a large muscular tube like the intestine contraction at the uretero-intestinal junction results, to be followed by dilatation of the ureter and hydronephrosis.

Those who argue for uretero-intestinal anastomosis in the human being are prone to defend the unfavorable results of their experimental work by arguments which a little consideration would have shown to be utterly valueless. For instance, Dr. Martin, in a recent article advocating removal of the bladder and uretero-intestinal implantation in order to extend the limits of the radical treatment of malignant disease of the pelvis, thinks that the upright position in man and the possibility of keeping the latter's rectum relatively clean will prove important factors in preventing infection. A septic cavity like the lower bowel can not be rendered clean by irrigations or the force of gravity. Do the best we can in these directions and myriads of bacteria remain, which could infect thousands of ureters and kidneys—if the former emptied into the intestine. The plea for flushing the kidneys by the employment of diuretics as a preventive of infection would prove of little avail in the presence of such active germs as inhabit the intestine. The endeavor to show that the ureters will take on rapidly increased resistance to infection by pointing out that many cases of exstrophy of the bladder survive at all ages, in spite of the contamination of the ureteral orifices, is unfortunate, since it has been shown that these unfortunate beings on the average only survive a little over 20 years. This in spite of the fact that the course of the ureters in the bladder wall remain intact and the ureteral orifices are not disturbed.

What about the improved technique by which so much was to be accomplished in the way of prevention of infection? The records of the

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experimental work on uretero-intestinal anastomosis reveal many different kinds of operations to guard against infection from the mucous flap to the burying the ureters in the muscularis in order that the urine be milked down and germs prevented from going up. Yet the animals were all infected wherever the method was employed. Then having failed to prove what they started out to, the advocates of the operation are driven to the statement that while it seems to be a failure in animals, uretero-intestinal anastomosis will no doubt prove much more successful in man, because of the greater resistance of the human ureter to infection and in order to prove this they cite certain cases where the patient has survived with a single or both ureters implanted in the bowel. But do the recorded cases place the operation in a more favorable light?

I have been able to collect 33 cases of uretero-intestinal implantations with a primary mortality of 37 per cent. If to these be added the cases dying later of kidney infection the mortality would be increased to 52 per cent., not a promising mortality for these days of aseptic surgery. For obvious reasons the supreme test of ureteral-implantation must come when both ureters are implanted simultaneously. Where the unilateral operation is performed, the implanted ureter and corresponding kidney may be entirely destroyed yet life be well sustained by the other kidney. If then we consider the bilateral ureteral implantations we find a primary mortality of 41 per cent. If to the cases dying from the immediate effects of the operation be added those succumbing subsequently to ascending pyelonephritis we are confronted with a total mortality of 59 per cent. Of the six cases surviving bilateral implantation, only one (Fowler's) has lived longer than a year. All the autopsies in the cases of uretero-intestinal implantations have shown well marked lesions of pyelonephritis and there is absolutely no more proof that the survivors have escaped infection than there was proof that in animals any kidney escaped infection after implantation of its ureter in the bowel.

The objection may be raised to these statistics that they include *all* the cases operated upon and that now the percentage of the recoveries would be greater. To this I would reply that I can not see that proportionately more cases are being saved to-day than formerly. Dr. Martin who has had an unusual experience in experimental ureteral surgery, in 1899 performed three bilateral implantation operations with three deaths and in only one case was death ascribed to shock. The failures are due to the intrinsic dangers of the operation, principally dangers of an ascending infection and no perfection of technique, I believe, will ever be able to eradicate these dangers.

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A surgeon would be obliged to state the case about as follows to a patient upon whom he contemplated performing the operation: "The primary mortality from the operation itself is over 40 per cent. If you are one of the fortunate sixty no one can say whether you will live a few weeks and die from an ascending kidney infection or whether you will be able to overcome this infection. In the latter event it will be impossible to say how long your contracted kidneys will serve you, perhaps months, perhaps years. No matter how good the operative technique may be all these things may happen to you. Do you choose the operation or not?" I think the majority, the very large majority of wise patients would decline.

Any operative procedure, where improvement in technique can not hope to greatly lessen the mortality, where the outcome, primary and ultimate, is simply a matter of conjecture, is not and can never be justifiable and has no place in pelvic surgery.

Uretero-trigono-intestinal Anastomosis or Anastomosis of the Vesical Trigonum and Its Ureteral Orifices with the Intestine.

The distinctive feature of this operation is the preservation of the ureteral orifices. Over ten years ago Tuffier, discouraged by the bad experimental and clinical results of uretero-intestinal anastomosis urged that the verico-ureteral orifices be retained in order that ascending renal infection might not result from the implantation. A few years later Maydl reported a number of cases of exstrophy of the bladder cured by implantation of the vesical trigonum with the sigmoid flexure with no apparent renal infection resulting. Since the publication of his article different operators have reported cases treated according to his method, the primary mortality and the permanent results being remarkably favorable.

I have collected from the literature 36 cases of uretero-trigono-intestinal anastomosis, a term I have ventured to suggest as more descriptive of the procedure than is "Maydl's operation."

There were 5 operative deaths out of the 36 cases or a mortality of only 14 per cent., a most remarkable showing considering the magnitude of the operation and that it includes the first cases operated upon. Two cases died four and fifteen months later of pyelonephritis. Including the two cases, the total mortality from the operation is 19 per cent. as compared with 59 per cent. when the implantation was made without the preservation of the ureteral orifices. Such mor-

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tality figures cannot be explained by difference of skill on the part of the operators.

The sphincteric control after uretero-trigono-intestinal anastomosis was remarkably good in 29 out of the 36 cases. In fact, in only one case was it noted as poor. Nineteen cases are living and well at the end of one year; 10 at the end of two years; 7 at the end of three years; 4 at the end of four years, and 1 at the end of six, and 1 at the end of seven years. No cases of renal infection have been noted, although transitory pains in the lumbar regions have been recorded in 5 cases. The only other possible symptoms of renal disease noted was in two cases reported by Herczel where marked polyuria was reported at different times subsequent to the operation. My own opinion is that the kidneys where the vesical trigonum with its ureteral orifices is implanted in the bowel do not entirely escape ascending infection, but that this infection is so slow and so comparatively slight that the kidneys are able to recover with a minimum amount of resulting contraction.

In order to study the changes resulting from the operation under discussion, after many failures I finally succeeded in devising a technique by means of which I was able to save my animals. They were the first dogs, so far as I have been able to ascertain from a study of the literature, that have ever survived the bowel-implantation of the vesical trigonum. The results of the experiments were very interesting and showed that where the vesical mucosa about the ureteral orifices was left intact, renal infection did not take place for at least two months subsequent to the operation, at which time the animal was killed for the purposes of the article. When the mucosa was removed a pyelonephritis developed as quickly as it did in the cases where the ureters were implanted without the ureteral orifices.

The details of these experiments and my modification of Maydl's operation, which is much simplified and described so as to make the operation a most practical one, will appear in the paper mentioned above.

Uretero-trigono-intestinal anastomosis is particularly applicable to the cure of exstrophy of the bladder, although it may also be used wherever the conditions present allow of the removal of the vesical flap with its ureteral orifices. There is nothing to prevent implantation into the bowel of one-half the trigonum with one ureteral orifice, in case of localized vesical disease, the other ureter being disposed of in some other manner if its vesical ureteral opening be encroached upon by the disease. Personally I have no faith in the

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extremely radical treatment of uterine cancer which has spread to the broad ligaments, believing that at this time the disease is beyond the reach of the surgeon's knife, but in case this be attempted where the bladder is uninvolved, intestinal implantation of the vesical flap would be the only rational method of disposing of the ureters. I believe then we may say that experimentally and clinically uretero-trigono-intestinal anastomosis has been proved to be a perfectly justifiable surgical procedure and as such has a limited place in pelvic surgery.

Uretero-intestinal Anastomosis by the Formation of Permanent Fistulæ connecting Bladder and Rectum.

This procedure has been made use of eleven times with varying degrees of success. It can hardly be said to have received a fair trial for about one-half of the operations were performed before the antiseptic era and the methods employed were rather crude. Keen reports a case operated upon twenty-two years previously, where a permanent fistula was formed between bladder, vagina, and rectum, with closure of the introitus. The patient at the time of the report was well and showed no signs of kidney infection. This freedom from infection or recovery from a small amount of infection is to be expected where the ureteral orifices have been allowed to remain intact. I have been unable to find a case where fæces passed from the intestine into the bladder and I am inclined to think that where the operation is properly performed this danger will be slight.

Frank's experimental work on vesico-rectal anastomosis is exceedingly interesting and bids fair to place the operation upon a sound scientific basis. He has shown that by means of his coupler the bladder and rectum can be safely and permanently anastomosed, and that the urine under these circumstances passes entirely by way of the anus.

Bacteriologic and microscopic examinations of ureters and kidneys of the animals surviving the operation for different periods show the organs comparatively free from ascending infection, although present in quite a few of the cases. Dr. A. E. Halstead has performed vesico-rectal anastomosis on a child 5 years of age, suffering from exstrophy of the bladder, and has shown the practicability of the procedure in the human being. Unfortunately the patient died of shock and the opportunity of settling some disputed questions regarding the operation was thereby lost.

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It is a question in my mind whether the procedure can ever be successfully made use of in cases of purulent cystitis due to enlarged prostate. Here we have a remarkably changed mucosa and ureteral orifices which are far from normal and under these conditions the admittance into the bladder of such virulent micro-organisms as find their habitat in the intestine would appear to me a hazardous procedure and one likely to end in rapid and overwhelming renal infection.

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TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, June 15, 1900.

The *President,* T. J. WATKINS, M.D., in the Chair.

Placenta Circumvallata.

Dr. JOSEPH B. DE LEE: This specimen is a typical example of placenta circumvallata. The history of the case is likewise one of intense interest. The placenta comes from a woman, 24 years of age, American by birth, but who is living in British Columbia. She had three labors before this one, in the course of four years. All of the children were still-born. The first was a single birth, the child was seven months, but came as a still-birth. The second was twins, which were still-born and macerated, at the sixth month. The third was a still-birth at the sixth month, not quite seven, and in all she had more or less trouble with the puerperium. In one of them she had milk-leg, and was laid up for six weeks. She has been married four years, and during that time has had an ovariotomy and extirpation of the tube on the left side for inflammatory disease. No physician has ever told her the cause of these still-births, and the children were not examined to find this out. She came to Chicago for the purpose of ascertaining the cause of the still-births, and, if possible, to get a living child. I examined her a day or two after her arrival. She presented the ordinary signs of pregnancy at about the fifth month. There were absolutely no signs of syphilis on her. A careful examination was made, and questions asked of the husband, and, as far as she knew, there was no history of syphilis. The kidneys were absolutely normal. There was no œdemas, and no symptoms referable to kidney insufficiency. An ocular examination was not made because there was no indication for it. The cause of the still-births depended upon some condition of the uterus which we could not diagnose when she was pregnant. We concluded that there was only one thing we could cure in pregnancy, if it was present, and that was a hidden syphilitic taint. Going on that suspicion, the woman was put upon bichloride of mercury, one-forty-eighth of grain, repeated three times a a day, and

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reduced gradually to a thirty-second. The case was handed to Dr. Harpole to watch and he called me last Saturday, saying that the woman had had a hæmorrhage on Friday night. This was unexpected. Examination showed that the cervix admitted one finger, and the edge of the placenta could be felt. The woman was removed to the Chicago Lying-in Hospital and put absolutely at rest. There were no labor pains during her removal to the hospital, the bleeding ceased. We waited twenty-four hours after admission, when she began to bleed again and passed a clot, and we concluded to interrupt pregnancy. The patient was put on a table and a large Carl Braun colpeurynter was inserted into the uterus, filled with twelve ounces of sterilized water, and traction applied by means of the hand. The assistant was told to hold the colpeurynter and to apply traction of about one to one and one-half pounds. This was about nine o'clock at night. Pains came on in about twenty minutes, and the physician remained until half-past four in the morning, when the colpeurynter was expelled through the cervix and came into the vagina. The patient was then put on the table, the colpeurynter drawn out from the vulva, and the hand inserted into the uterus. The placenta was found freed from the uterine wall, and the child's head pushed off to the side. The child was immediately delivered by version and extraction, but was asphyxiated when born, coming around under the usual measures. It was put in an incubator, is thriving, and has gained three-quarters of a pound. I forgot to mention that the woman was seven and a half months' pregnant. Immediately after the baby was expelled a large quantity of blood escaped, so that the placenta was extracted without any delay by means of the hand. In doing so the placenta was somewhat torn, being adherent by that part which had not become loosened when I did version. The uterus contracted properly. The hæmorrhage came from the lower uterine segment. We could not determine that there was any deep laceration, so the utero-vaginal tract was tamponed tightly. The hæmorrhage ceased. The pulse, which was about 100, went up to 120, but came down in an hour to 110. Puerperium normal, involution rapid, no fœtid discharge, no tenderness, etc.

On examining the placenta you will notice that it presents a very typical appearance of a placenta circumvallata. The membranes occupy possibly one-half the extent of surface of the placenta. There is a ring of decidua where the chorion leve is reflected off from the chorion frondosum. It looks as if the placental tissue had grown out underneath the membranes in a horizontal plane. You will notice a thick layer of decidua, which is entirely separated from the mem-

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branes, and was evidently stripped off from the uterus. It is nearly one-eighth of an inch thick, showing an immense hypertrophy of the uterine mucous membrane. There are shreds of decidua which can be stripped off. You can see fenestra which show the openings of the glands of the mucous membrane in the decidua. Furthermore, the placenta shows very well a ring which represents the original edge of the closing plate of Winkler, or, as it is sometimes called, Waldeyer's ring. It ought to be called Hunter's ring, because he described it several centuries ago. The placenta has grown out underneath the ring and has grown into the decidua vera, not into the reflexa, as it can be seen, the reflexa is lifted up with the chorion leve.

The causation of placenta circumvallata is variously given. One explanation is that the placenta grows in the corner of the uterus, and as a result acquires a circular ring and the placental tissue grows out alongside of it. Another theory is that the uterus is larger at the seventh or eighth month—owing to hydramnion it acquires that size, and then later, when the fluid is absorbed, a diminution of the placental site is produced. I do not think either one of these causes or theories is tenable for all cases. It is certainly not for this case, because here the placenta grew in the lower portion of the uterus. Another explanation is that it is due to endometritis; that the placenta at the third or fourth month becomes more than usually adherent, so that in the subsequent growth of it the ring does not expand sufficiently for the needs of the placental circulation, and in order to obtain a sufficient extent of placental surface the chorionic tree grows out underneath the ring. This strikes me as a plausible explanation, and the one which I think the majority of obstetricians adopt. Another explanation is that the placenta develops in the reflexa. Here would be the chorion leve and against it the reflexa [illustrating], and as a result of some cause the chorion leve does not atrophy at the third month, but the villi continue to grow and we have part of the placenta in the reflexa.

In this connection the causes of placenta prævia may be mentioned. Placenta prævia may be due primarily to a low insertion of the placenta in the lower uterine segment; second, to inflammatory processes which injure the growth of the placenta in certain directions, so that it develops in the reflexa. Later, as pregnancy goes on, the reflexa comes to lie over the internal os. The connection between the causes of placenta prævia and the causes of placenta circumvallata is such that clinically we find a large number of placenta prævia cases presenting the condition of placenta circumvallata. In the next room to where

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this patient lay in another with placenta prævia. She likewise had a placenta circumvallata, but it was not as marked in her case as in this. She went on to term, and was delivered spontaneously.

Of twenty cases of placenta prævia, Bayer found that eight had placenta circumvallata. [Here Dr. De Lee demonstrated the more interesting points in the specimen exhibited.]

My idea of this case is that this woman has an endometritis, and she probably had it before she was married, or it came on after marriage, and as a result she had infection of the tube which necessitated its removal. Again, as the result of the endometritis the previous children died and were expelled, or as the result of the endometritis again, pregnancy took place lower down in the uterine segment, the placenta developed normally up to the third month, when the ring of Waldeyer became abnormally adherent to the lower uterine segment. Owing to the necessity for a larger placental area, the placenta grew from out underneath the ring. From a pathological standpoint, this placenta is interesting, in that it throws light upon the formation of placenta prævia.

Discussion.

Dr. Charles E. Paddock: I may have misunderstood Dr. De Lee, but he conveyed the impression that in the majority of cases of placenta prævia we find this condition of placenta circumvallata.

Dr. De Lee: I believe I said in about forty per cent. of the cases of placenta prævia this condition is found.

Dr. Paddock (resuming): I have had quite a number of cases of placenta prævia, but have failed to find placenta circumvallata, and if these cases are so frequent as the doctor says, it is news to me.

I regret that I was not here in time to hear the doctor present the case. In regard to his treatment of post-partum hæmorrhage, I believe he said he packed the uterus, in preference to using hot water. I would like to ask him why he packed the uterus? In all of my cases of labor attended with post-partum hæmorrhage, I use hot water at 120°, and have not been called upon yet to pack the uterus in a case of post-partum hæmorrhage. There are cases perhaps where this might be advisable, but I would like to know whether it is the routine practice of Dr. De Lee to pack the uterus in these cases instead of using hot water.

Dr. Gustav Kolischer: I wish to corroborate the statements of Dr. De Lee, namely, that in cases of placenta prævia placenta circumvallata is a comparatively frequent finding. In so far as the treatment is concerned, I would like to say a few words with reference to post-

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partum hæmorrhage. If a physician in a case of placenta prævia, where there is a real past-partum hæmorrhage, flushes the uterus with hot water, he is very likely to lose his patient. The only reliable method of stopping post-partum hæmorrhage in a case of placenta prævia is to pack the uterus. There is no doubt about that. By trying different methods to control a post-partum hæmorrhage we may lose our patient. A patient who has a placenta prævia loses so much blood, that we cannot afford to have her lose any more by experiments. There is but one opinion among the leaders in obstetrics with reference to a reliable method for controlling a post-partum hæmorrhage, and that is to pack the uterus. I do not think it is possible to stop a post-partum hæmorrhage by the injection of hot water in a case of placenta prævia. The woman bleeds so rapidly in these cases that if the uterus is not packed promptly she may die inside of a few minutes. The uterus should be packed tightly. It is impossible to control these hæmorrhages by means of irrigation with hot water.

There is only one point with which I disagree with Dr. De Lee in the treatment of this class of cases, and that is in the method of using a colpeurynter. The best way is to attach a weight to the colpeurynter, for in this way one is able to maintain a uniform pull on the colpeurynter for a considerable length of time. Sometimes the obstetrician may pull too much, and consequently there is a hæmorrhage on top of the colpeurynter. In the same way, when there is relaxation, there is a hæmorrhage, and one of the best methods is to dilate the cervix gently by attaching a weight to the colpeurynter.

Dr. Lester E. Frankenthal: I do not quite agree with either Dr. De Lee or Dr. Kolischer. I do not know how many cases of placenta prævia I have had up to the present time, but in all cases where I have had hæmorrhage not sufficient to indicate immediate delivery, I have by detaching portions of the placenta been able to prolong pregnancy for a week or two or even six weeks. In one case, where I did so several times, pregnancy was prolonged for more than six weeks, the child brought to vability and subsequently partially raised in an incubator. But whenever I want to deliver in a case of placenta prævia, and where a good deal is dependent upon the life of the child, especially if the mother be a multipara, I always make rapid dilatation by the Maurer method, and I do not, for instance, begin, as I believe the doctor did, at ten and quit at four in the morning, but make rapid dilatation which can be done in from thirty to sixty minutes. The two chief objections to rapid dilatation is first, injury to the soft parts. I am positive that this can be avoided. Second, air embolus, which would apply as well to a slow,

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as to a rapid method of dilatation. I am firmly convinced of one thing, and that is a child's life will be more frequently saved by rapid than by slow dilatation. That is proved by Dr. De Lee's case. He tells us that the greater part of the placenta became detached, and it is a wonder the child was alive when he did version. In many of these cases the colpeurynter is passed in and a part of the placenta is turned upward in the uterine cavity. It is not at all compressed by the colpeurynter, and hæmorrhage from that portion of the placenta it not checked by the colpeurynter, but it continues inside of the uterus. Cases of this kind have been published. In these cases, where there is an indication to deliver, I believe that the mother will not be harmed by the rapid method, and we will certainly save more children.

I heartily endorse what the doctor has said about placenta circumvallata in connection with placenta prævia, and in a case of that kind, or in a case of placenta prævia, I would not stop to use hot-water douches for the purpose of checking a severe post-partum hæmorrhage, but would pack the uterus every time.

Dr. Frank A. Stahl: Dr. De Lee is to be congratulated on the pleasant outcome of his case in saving the child. It has always seemed to me that where it is a question of saving the life of the child, it is safer to confide in rapid dilatation by means of the fingers. In the case under discussion a slight delay of but a few more moments would have robbed the case of all its glory, namely, saving the child's life. Personally, I prefer where possible rapid digital dilatation. By this method, and especially with chloroform, we can open the cervix and resort to turning, often in a moment or two. If there is a concealed hæmorrhage, the child may be lost by the delay in a longer dilatation. In primiparas and multiparas, with eclampsia even, it is a pleasure to see what can be accomplished with the finger and half hand in the cervix towards rapid dilatation, turning the child, and saving often both; whereas, of waiting for other slower dilatation, the child is lost and the serious effect on the mother continued.

With reference to the control of post-partum hæmorrhage. I have never yet packed the uterus, whether the case be complicate, an abortion, premature labor, or labor at full term. I have had a few of these cases, and yet I would like to meet with one of those severe cases of post-partum hæmorrhage, should unfortunately one arise, such as the gentlemen say they find great difficulty in controlling, and that necessitates packing as a *dernier ressort.* There is nothing difficult in packing the uterus, so the question narrows itself to one of expediency. So long as the uterus continues subretracted or enlarged.

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there is danger from oozing, if nothing more serious; packing keeps up this danger, for the pack acts like the retention material, in tending to retard rather than to emphasize uterine retraction, the best controller of uterine hæmorrhage. It is possible that the cases I have had have been unlike theirs, or what is more likely, they were controlled before going on to such serious expressions, and yet as a type of a serious post-partum hæmorrhage the following case might be mentioned. So far as concerns the merits of a critical case of post-partum hæmorrhage, it was ideal. I encountered the case in the outdoor service of the Frauen Klinic in Munich. It was in a diabetic woman, in her twentieth or twenty-second birth, with a very large fœtus, which I turned. Noticing a severe hæmorrhage immediately after I had extracted the fœtus, without any further loss of time I expressed, by means of a Credé, the placenta. The cervix was torn, but tear did not extend further. The hæmorrhage not ceasing, I resorted to a cold-water and vinegar solution of about equal parts as a douche. The hæmorrhage ceased some, but the solution was not strong enough in action to overcome that peculiar hissing sound which indicates a hæmorrhage from an artery of the size of the cervical, a sound which is peculiarly grating under these circumstances. Reaching up with my hand, I received the several tongues of the torn cervix between my fingers, and drew the uterus down so as to be able to encircle the cervix by means of several deep stitches. In drawing downwards I noticed care had to be exercised to prevent the tissues from tearing further because of the traction; the tissues seemed to be friable. The cervical artery stitched, all other hæmorrhage quickly ceased when again using the vinegar and water irrigation. In connection with post-partum hæmorrhage this is the only case where I have found it necessary to augment the vinegar and cold-water irrigation method with stitching. The suggestion of using vinegar for hæmorrhages belongs to Professor Penrose.

In closing, I would mention that I was pleased to hear Dr. De Lee's remarks that he does not hesitate where necessary to introduce his hand into the uterus for the purpose of removing the placenta. Several years ago the doctor and others were shocked to hear that I did not hesitate to introduce my fingers into the uterus for the purpose of removing the placenta or other retention.

Dr. O. B. Will of Peoria: I do not intend to discuss this subject any further than to say that I am actually dumbfounded to hear what has been said regarding the treatment of post-partum hæmorrhage. Over thirty years ago a student in my class lost his position in his

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examination by determining in the presence of the examiner to do the very thing here and now advocated, and I have always stood in horror of doing anything of the sort, and I cannot now understand what is to be gained by tamponing or packing the uterus, which means dilating it. The moment the gauze is removed the hæmorrhage will continue; the uterus is in a dilatable condition, and I do not understand the object under those circumstances in refilling it ever so full with something, whatever it may be. It has been my practice to use measures to *contract* the uterus, to compress it from the exterior, to use ergot and cold applications. I would like to have the philosophy of this treatment by dilatation. It is the first time I have ever heard it advanced, and I would like to know something more definite regarding the theory of its employment and action.

Dr. GUSTAV KOLISCHER: There are some points in this discussion that have been brought forth which I think ought not to pass uncontradicted. Dr. Stahl has recommended dilatation of the cervix by means of the fingers in cases of placenta prævia where we try to save the child. I cannot see the necessity of dilating the cervix with the fingers. So far as I know, in Germany, in most cases of placenta prævia, the obstetrician is almost sure to lacerate the cervix if he resorts to dilatation of it by means of the fingers, and many women die in consequence of the practice of such a method. The circular veins about the uterus in placenta prævia are so large and the walls are so thin that the obstetrician is very apt to lacerate them. The woman is liable to bleed to death into her parametric tissue. Dilatation of the cervix by the fingers, therefore, is unsurgical and unscientific. We have other means of dilating the cervix in a uniform way. For instance, we have the use of Hegar's colpeurynter, or we can pack the vagina around the cervix, and in this way secure the necessary dilatation inside of half an hour. Such a man as Carl Braun, with an experience of a hundred and fifty thousand confinements, admitted that he had lost a number of cases of placenta prævia before he developed his method. Again, such a man as Winckel, who has had a vast experience in obstetrics, and Schauta, who has had sixty thousand cases of confinements, say that they have lost cases of placenta prævia, and the latter says the reason why he does not lose more is because he knows how to treat them by dilatation by means of the colpeurynter, and packing the uterus in each case of placenta prævia where there is the slightest post-partum hæmorrhage. The experience of such men should have considerable weight in an obstetrical way.

Dr. DE LEE (closing the discussion): So many points have been

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brought out that I doubt very much whether I can answer them in their order. In reference to the remarks of Dr. Paddock as to the percentage of cases of placenta circumvallata, I did not give any statistics of my own cases. I mentioned the statistics of Dr. Bayer, who had found that 40 per cent. of the cases of placenta prævia were complicated by placenta circumvallata; in other words, Dr. Bayer reports 20 cases of placenta prævia in which there were 8 of placenta circumvallata.

With reference to packing the uterus for the control of hæmorrhage and the non-use of the douche, this woman was given a hot douche, but not as a means of stimulating the uterus to contract because the uterine body did contract. The hæmorrhage came from the lower uterine segment. It is impossible in a case of placenta prævia to avoid some injury to the cervix, either superficial or deep. It has been absolutely impossible for me to dilate the cervix in a few minutes by means of my fingers. I have never seen a cervix yet but what would tear in the process of dilatation, whether pregnant or non-pregnant.

Dr. Will wishes to know the philosophy of packing the uterus. It does seem unphysiological. The old teaching was to empty the uterus so that it could contract. Dr. Will will undoubtedly remember some case where he has expressed clots from the uterus, when it would fill up again with clots. He would express these clots a second and a third time, until the patient became seriously anæmic. If he keeps on expressing clots, he would kill the woman by so doing, because these clots are blood, just as important as a stream of it. If he would let them alone he would find the uterus would contract on them and the hæmorrhage would stop. Packing the uterus stimulates it to contract upon the packing. Fatal hæmorrhage from atony of the uterus is rare. Hæmorrhages, which come from atony of the lower uterine segment, cannot be reached by douching or vinegar, as Dr. Stahl recommends, or any of the astringents, except the iron preparations, which are dangerous. Packing is the successful treatment for atony of the lower uterine segment. I am speaking now of packing the utero-vaginal tract. Two cases of hæmorrhage from the lower uterine segment treated by hot douching have been reported by Maygrier.

Dr. Kolischer spoke about the use of a weight attached to the colpeurynter instead of the hand. There is nothing in my mind so serviceable as the hand, because it is intelligent.

In answer to Dr. Frankenthal. There was no necessity for imme-

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diate delivery of the child. If we attempt immediate delivery with a cervix that will only admit one finger at the start, we would lacerate the cervix. Schroeder warns against hasty delivery in cases of placenta prævia.

With reference to Dr. Frankenthal's statement in regard to separating the placenta at intervals of two to six weeks during later pregnancy, in order to tide the patient along till term, I may say there is always a personal element which enters into the treatment of every case.

The late Dr. Jaggard, whom many of you remember, laid it down as one of the principles in the treatment of placenta prævia that there is no expectant plan of treatment for it. I believe that unless this woman had decided to go to the hospital and lie flat on her back in bed, the indication would have been imperative to empty the uterus as soon as the diagnosis was made. I would not undertake the risk that Dr. Frankenthal did of separating a portion of the placenta every few weeks, and waiting till term, because the patient might have had a profuse hæmorrhage, which in a few minutes would cause death.

Some of the remarks of Dr. Stahl were bizarre. It is hard to understand how the doctor in the case he mentioned controlled the hæmorrhage from the cervical artery with vinegar. I do not see how a hæmorrhage from the cervical artery can be stopped by the method referred to. Many obstetricians have tried vinegar for the control of hæmorrhage from atonia uteri, and they claim to have been very successful. Dr. Stahl says he has never met with a severe case of post-partum hæmorrhage that he could not readily control. I will say to him, that he will encounter such a case some day.

Lastly, Dr. Will mentioned the infrequency of post-partum hæmorrhage. I do not believe death from post-partum hæmorrhage is rare. In Germany, it is said, a woman dies of this accident every day.

Some Local Nutritive Influences in the Pelvic Disorders of Women.

By O. B. Will, M.D., of Peoria.

(See page 189.)

Uretero-intestinal Anastomosis and Its Place in Pelvic Surgery.

By Reuben Peterson, M.D.

(See page 197.)

Discussion.

Dr. Albert Goldspohn: The substantial facts that have been mentioned by Dr. Peterson in regard to the inability to transplant the

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ureters into the intestinal canal directly, without a portion of the surrounding bladder wall or trigonum, have been well known for a number of years. At any rate, we have the word of Glück, Tuffier, Smith, Zeller, Bardenheuer, and others, which the literature has afforded us for a number of years, and knowing this I expressed some surprise to Dr. Peterson about a year ago, and intimated that the labor thus bestowed is likely to be labor lost. I am sorry to say that his conclusions rather confirm that prediction. I had hoped I would be mistaken, but I am not so far in regard to all operators with the possible exception of Dr. F. H. Martin, and Leon Krynski, who made a very brief statement in regard to his work on dogs in the year of 1895, published in the *Centralblatt f. Chirurgie* for January 25, 1896. At this time an assistant in a Russian clinic, Dr. Leon Krynski, made experiments along this line, and devised a method for implanting the ureters into the rectum which embodied the principles that Dr. F. H. Martin has recently carried out, and it seems to me as not so likely to result in stenosis of the ureter at the point of its insertion into the rectum as is Dr. Martin's method or technique. That surgeon made an incision, not simply through the peritonæum as Dr. Martin does, but through the peritonæum and the muscularis, and exposed the unbroken mucous membrane of the bowel. He made a triangular flap, the long side of the triangle running parallel with the axis of the bowel, and the shortest side of the triangle transversely, the longest side being about three centimeters in length. The flap of serous and muscular cots was turned over on the line of the hypotenuse. He then made a small opening through the mucous membrane, attached the orifices of each ureter by means of four interrupted sutures, uniting the mucous membrane of the ureter with the mucous membrane of the bowel, then simply turned the flap back over the ureter and sewed its edges down. Only two of these stitches caught the wall of the ureter. But it was attached to the peritonæal coat of the bowel a short distance before passing under the flap. With this technique, which he had practised upon quite a number of dogs, he did not say how many, he had not met any case of ascending renal infection. He does not give other details, nor does he mention how many fatal cases he had.

In regard to the technique which Dr. Martin has adopted, I very much fear stricture and the development of hydronephrosis, especially after such results as were experienced by a Frenchman, who operated on twenty-four dogs. He sewed both ureters into the rectum in ten of them. Of this number, two died of peritonitis, six died from peri-

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tonitis and infection of the urinary tract, and two died of uræmia. He implanted one ureter into the bowel in fourteen dogs, all of which died promptly, with the exception of one, and hydronephrosis developed in quite a number of them.

This same work was gone over by a Russian named Galabin, who conducted experiments on nine dogs, implanting both ureters into the rectum in five of them. Three of these died of peritonitis, two of uræmia. He implanted one ureter into the rectum of four dogs, three of which died within a few days, and one lived a month, when the autopsy showed a normal condition. So of these several series of experiments there is really only one instance where a dog has lived one month, and the parts showed a normal condition.

As far as the merit of this experimental work is concerned for carcinoma, I see very little practical use for it. To enlarge the field of indications for radical operation it will have very little application because the extensions of carcinoma of the uterus are not so frequently into the larger portions of the bladder as they are into the broad ligaments and the glands lying in the posterior portion of the sacral cavity. The instances in which carcinoma becomes inoperable are far greater from extension to this region than into the bladder, and if a portion of the bladder is involved, it can be resected, and the gap sewed up, which I have done in several instances. Therefore, I still look at this experimental operative work as dubious, and I am sorry that Dr. Peterson has not a more favorable report to offer us regarding these operations.

Dr. Gustav Kolischer: I do not think Dr. Peterson's paper should pass without a word or two being said in recognition of its value. We do not have many papers presented to us so full of scientific research and exact figures as this one. He does not come before us with simply his personal opinions, but gives us the details of his experiments and results and the conclusions at which he has arrived. The transplantation of the ureters into the intestine is of great importance to modern surgery. We have not only to deal with this work with the uterine muscles which involve the bladder, but frequently we have to deal with cases where, in a healthy individual, it is necessary to find a new receptacle for the urine. One of the greatest merits of the work of Dr. Peterson in this respect is that he has proven by experiments on dogs that the so-called demonstrations of immediate transplantation of the ureters into the intestines are erroneous. This is very important because quite frequently some one appears before a society and shows a dog or a patient that is half-dying from an opera-

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tion of this kind. He simply shows the case as an example for his method of operating. I have seen a great many of these demonstrations at the Chicago Medical Society, and the methods that are advocated are questionable as far as their usefulness is concerned. The experimental work of Dr. Peterson convinces us that some of the methods that have been advocated are of doubtful utility.

So far as the method of Dr. Martin is concerned, it should not be taken seriously, because the specimen he has shown to us presents evidences of pyelitis. Dr. Peterson, furthermore, has given us a plausible explanation for some of the so-called successes which have been nothing less than cases of contracted kidney. Some of the observations of Dr. Peterson do not agree with the results of other workers in this line on human beings, because Maydl reports two cases, and Ewald one case, where they excised the mucous membrane to avoid infection from disease of the mucous membrane, and these cases are living, it now being two years and a half since these operations were done. These experiments are interesting from a physiological standpoint, because they show that the epithelial lining of the mucous membrane has something to do with the action of the ureters, and I think the theory which I advanced some time ago, although I cannot prove it, is at least possible. The best protection for the kidneys against infection is that the ureters normally contract and are flushed by a sudden flow of urine. If this action of the ureters becomes stopped for some reason or other, the kidney becomes infected because there is a continuous stream of urine coming from the kidney pelvis to the intestine, so that it is possible for infection to occur.

In regard to the connection of the bladder with the rectum, the work of Dr. Martin does not prove anything because we have to deal with different conditions in animals. We do not intend to establish a fistula between the bladder and rectum, but this communication was rather an unfortunate accident and trouble arose because the urine did not pass through the rectum, but the fæces passed into the bladder.

Again, I wish to congratulate Dr. Peterson on his excellent work and consider his paper one of the best we have had for a long time.

Dr. John A. Lyons: I have listened to Dr. Peterson's paper with a good deal of interest, and his modification of the Maydl operation is one that we can safely commend. I believe it or the Maydl is the ideal operation for the purpose of preventing infection of the kidneys with fæcal or septic matter.

I have had the pleasure of seeing Dr. Martin do some of his opera-

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tions for uretero-rectal anastomosis, and to observe the results upon dogs. The operation, as he does it, is a difficult one—one that requires a good deal of mechanical and technical skill, and one that cannot be done by every surgeon without direct experimental work. However, his operation is intended for such cases as contraindicate the Timothy Holmes, the Frank, the Maydl, or Peterson operation, and that is in those cases where the cancer has extended above the trigone of the bladder, or where it has involved the uterus, the vagina, the bladder, the trigone, and the lower portion of the ureters themselves. For these desperate necrotic and septic cases Dr. Martin intended his operation. I have had two such cases myself in which, I am sure, neither the Maydl nor the Peterson operation would have succeeded. Neither do I believe Frank's operation, by which with his coupler he connects the bladder with the rectum, would have been indicated. Dr. Martin has therefore aimed to overcome these desperate cases of cancer by dissecting the ureters out of the pelvic wall, tying them off above the zone of disease, anastomosing them into and parallel with the long axis of the rectum. Of course, it is almost impossible to avoid some kidney infection because we have by compulsion done away with the valves which prevent the ascent of fæcal or infective matter, yet I am quite certain that this experimental work is not love's labor lost; or should it be stopped, because of Dr. Peterson's conclusions. It is not many years since that intestinal anastomosis was in almost as bad a condition as uretero-intestinal anastomosis is to-day, but by the perseverance and labors of such men as Senn, Frank, Murphy, Van Hook, Connell, Ferguson, and others, intestinal anastomosis to-day has been brought to a very fair state of progress. In the Van Hook class, where the Lembert suture is used, over 75 per cent. of successful work is obtained, and the Connell method of suturing, I think, will give still better results, for it is easy learned, and can be done quicker. I believe we will secure better results in the future from these operations than we have had in the past, because of so much persistent experimental work, and I am certain also that there are cases of cancer which can be materially relieved, if not cured, by the method of Dr. Martin, and where other methods of intestinal anastomosis could not possibly succeed. For, as I have said, it is only in the very desperate cases that Dr. Martin suggests this operation, and if the surgeon can in some of these cases prolong life for even three months he will have done a great service to such patients and their relatives. One of the patients I referred to would have given anything to have undergone an operation and to have gotten rid of the great suf-

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fering which she had, for even a short period of time. It was one of those cases, most surgeons have had, where the patients pray for speedy death when informed of the hopelessness of their case.

Dr. F. GREGORY CONNELL: During the past year I have had occasion to look up the literature on exstrophy of the bladder in connection with some experimental work on the implantation of the ureters into the rectum, and have found that the methods of radical treatment may be subdivided into:

1. Lateral anastomosis, between ureter and intestinal tract.

2. Section of ureter, with implantation into bowel, by means of (*a*) mechanical appliance; (*b*) suture.

3. Implantation of ureter into bowel, in a manner imitating the normal ureteral opening into bladder.

4. Implantation of trigonum.

5. Vesico-rectal anastomosis.

6. Miscellaneous, such as (*a*) vesico-vagino-rectal fistula, with secondary closure of vagina; (*b*) formation of artificial anus, dividing intestine at the sigmoid; then inserting ureters into the excluded rectum; (*c*) formation of artificial bladder out of a loop of small intestine.

During this time I have repeated some of these methods upon animals in an effort to find out, if possible, which was the best method of uniting the ureter and bowel. I did not succeed.

In the experimental work, death of the dog resulted in all cases where both ureters were transplanted into the intestine. From available literature, the mortality rate in dogs was found to be extremely high.

Of the Maydl method, which meets with such marked success in the human being, eleven cases in dogs were reported, all of which ended fatally. I believe Dr. Peterson is the first to save a dog after performing the Maydl operation or a close imitation of the same. In other cases, in which but one ureter was implanted into bowel, the animal recovered from the operation, but at the autopsy a stenosis with marked hydronephrosis was found.

From the literature and experiments, it seems that transverse section of ureter and implantation into bowel are not indicated in exstrophy of the bladder; but that the Maydl operation is the method of choice. The operation suggested by Dr. Martin is done as a last resort, and as it is impossible in all such cases to do the Maydl operation, it becomes a question between the operator and the patient whether the risk of this last resort is to be incurred. Cases are on record where the patient has survived for some time the double implantation of the

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divided ureter. On the other hand, if the patient is left alone it will mean death in a short time.

A detailed account of my work will appear shortly in the *Journal of the American Medical Association,* and I will not say anything more about it at this time.

Dr. PETERSON (closing the discussion): Dr. Kolischer has anticipated me in what I would say in reply to Dr. Goldspohn. Every now and then we pick up a medical journal and see where some man with a great flourish reports a new operation for implantation of the ureters into the rectum, or a case will be reported in which this operation has been performed upon the human being. If it is a justifiable operation, surgeons should employ it wherever it be necessary. If it is unjustifiable, we should strongly condemn it and not employ it, even in the cases of last resort, referred to by Dr. Connell. The surgeon should have some respect for his art, and should not say to a patient, "You are going to die anyway, so you would better let me operate upon you and try this new procedure." That, to me, does not seem good surgery.

I did not in the paper just read go over my experiments and operations in detail; I simply brought the matter to the attention of the members as an answer to the article of Dr. Martin which he read in Philadelphia, and which was published in our official journal. The views expressed by him in this article I believe to be erroneous and I fear will lead to a great deal of unjustifiable operating. I am sorry that Dr. Martin was unable to be here to reply to my paper. I have gone over the literature very carefully and have collected it all up to date. The experimental work of the gentlemen mentioned by Dr. Goldspohn is included in the article, which is an extensive one. The operation of Krynski, like the rest of them, was practically a failure. We have simply a statement of two lines, saying that he never has had a case in which he has discovered infection. That is not enough proof. We must have more than that. We must have microscopic and bacteriologic examinations made of the specimens, and it is for the purpose of showing the unscientific character of much of this work that I have devoted eighteen months to experimental work upon this subject.

Dr. Kolischer spoke of the downward plan of the urine as a factor in preventing ascending infection of ureter and kidney. It is certainly a plausible theory, one that we should consider carefully, and one that has been dwelt on at some length in my article. But I fail to see how the theory will hold good when we consider the facts brought out by certain of my experiments. I took the trigonum of a dog and split it in half. I implanted these separately, removing the mucosa from one orifice.

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The kidney corresponding to the ureteral orifice from which the mucosa was removed was infected in ten days. The other was uninfected, and the bacteriologic and microscopic findings were negative. Of course, the same power governed the flow of urine in both of those cases, yet infection occurred in one, and not in the other. At the same time, I had serial sections made of the ureters in order to discover what this so-called valve or sphincter was at the ureteral orifice. I found no valve or sphincter there, but a slit in the mucous membrane, and I do not see how this alone will prevent an ascending infection. I have endeavored in my paper to cover this point, but inasmuch as it is a theory I will not take up your further time in discussing it. Maydl's operation seemed unnecessarily complicated, hence my modification.

Dr. Lyons spoke of continuing this uretero-intestinal anastomosis work, although it has not proved to be a success. It is entirely different work from bowel anastomosis. In this we have to deal with intrinsic dangers which we cannot sweep away, and we have the ever-present dangers of infection in the other, we have something which has been overcome, and which we can still improve upon particularly in reference to the technique. One is an impossibility, the other is a possibility, and it has been proved so.

I can only commend the work I have seen Dr. Connell do. I will say here that Dr. Connell's experimental work and his literary research on exstrophy of the bladder secured for him the Senn prize at the last meeting of the American Medical Association.

Although my experimental work has shown uretero-intestinal anastomosis without the ureteral orifice to be a failure, I feel that the mere proving of this point is of great value and that my time has not been wasted.

Official Transactions.

C. S. Bacon,
Editor of the Society.

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CURAGE; TWO ADVANTAGES IT POSSESSES OVER CURETTAGE.*

By Frank A. Stahl, M.D., Chicago, Ill.,
Instructor of Obstetrics, Rush Medical College.

When referring before this Society to curage, the use of the finger to remove retained secundines in early labors, it has always been my pleasure to meet with a discussion overflowing with warm appreciation though not entirely of an affirmative nature. But when I compare the heated negative sentiments extended curage some few years ago with the favorable and commendatory tone with which its use is regarded to-day, both in instruction and in published reports, likewise at home and abroad, I am constrained to believe that experience has shown that digital curage is not the wicked means for removal of secundines once so positively affirmed.

Budin has recently added his voice to those favoring curage (*Progres Med.*, September 17, 1898); Lantos (in the *Monatschrift für Geb. u. Gyn.*, Band IX., Heft 5) speaks of "300 cases in the first three months of pregnancy. In 246 cases the uterus was emptied with the finger, 4 with the forceps, and in 50 with the curette. One of these cases ended fatally from septic infection. This was the only fatal case in 300. As a rule, the more rarely an instrument or finger is introduced within the uterine cavity, the better for the patient. The finger is preferable in recent cases of abortion wherever it can be introduced. It is always better to curette or to empty the uterus with the finger rather than to employ intra-uterine douches."

In presenting the following cases it is done not only to reiterate that the finger is advantageous where it can be introduced but to show two special and distinct advantages which the finger possesses over the curette.

1. The superior advantage of the finger in recognizing foreign bodies.

2. The superior shelling out intact of the secundines advantage of the finger, instead of the usual morselling by the curette and forceps. Both of these advantages are of much importance.

Case I.—From an eight- to ten-week abortion where the cause is plain. When called to the case there had been chills, fever, and hæmorrhage, otherwise patient would have tried to finish without the doctor's assistance. Chloroformed, cervix permitted the finger to slip

*Read. For *Discussion*, see page 235.

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up into cavity after a little persuasion, easily shelled out the secundines (Fig. 2) quite intact. The important circumstance to be recognized and corrected, of more importance even than the retained secundines, was the bit of sponge, the broken-off tip of the sponge-tent used to induce the abortion. While pealing off the secundines, the finger felt the foreign body; a second touch interpreted its nature. Even after abdominal pressure had expressed the secundines, it required two attempts with the finger to bring the sponge-remnant away, its mucilage added to its slipperiness; pressure alone made it but slip from side to side and not outward. It is hardly necessary to speculate what

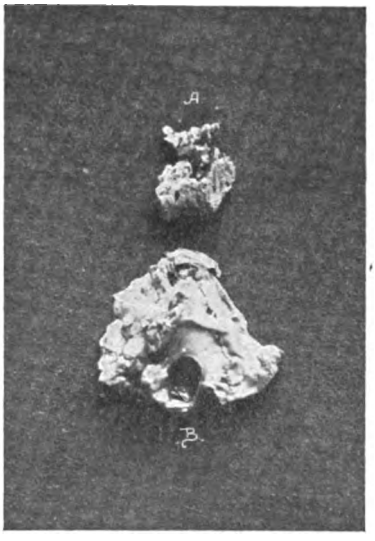

FIG. 2.—Secundines from Case I, an eight to tenth week abortion, removed with finger.
a. Tip of sponge tent used to induce the abortion.
b. Secundines intact.

the results would have been in this case had the operator rested under the deception conveyed in the complete secundines alone. An intra-uterine douche with carbolic acid was given, subsequently followed by vaginal douches; patient up and about in three days.

Case II.—(Figs. 3 and 4.) Some one had introduced a No. 4 laminaria tent. Patient taken with great pain and some hæmorrhage. When the attendant wished to remove the tent, the tent could not be found. The explanation is simple. The tent had slipped up into the cavity, the inferior cervix closing over its lower end. Still hoping it would come away altogether, the attendant waited, but pains, rigors,

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and hæmorrhage causing alarm, assistance was sent for. When I arrived the attentant was not there, but I could easily gather what had been intended. Chloroformed, the tip of what must be a tent could be felt by pressure on the cervix below, I did not press on the fundus, as in a Hoenning, for theoretically there must be danger of the tent's edge cutting the uterine walls, possibly through and through. With the finger tip the cervix was easily opened, for the canal was well dilated and the tent removed by means of a dressing forceps. Thereafter

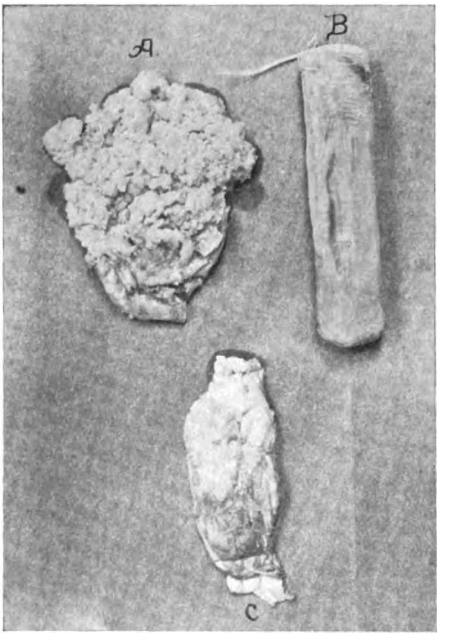

FIG. 3.—*A.* Oval sac from Case II., serotinal aspect, tenth week.

B. Laminaria tent, cause of abortion, had slipped up so as to be covered by the cervix; attendant alarmed, dropped the case.

C. Decidual and oval cast from Case III., of seven to eight weeks. Cause of abortion not ascertained.

the partially loosened oval cast was completely shelled off and expressed, followed by a carbolic uterine douche; vaginal douches subsequently. Fourth day after, patient got up and about.

Case III.—This is a decidual cast, partially loose when I was called; with finger completed the loosening; spontaneous delivery.

Aside from the arguments against the finger that it is unsurgical and septic, and which experience and time have shown "not proven,"

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it is claimed (1) that the tip of the finger cannot reach the fundus and remove all the secundines; (2) curage, it is claimed, is more painful than curettage. Ruling out the anatomically or physically defective hand and finger of an operator, I have found in discussion that where this first objection has held that the finger cannot reach the fundus, the index finger had been made use of. Now, I admit and have so main-

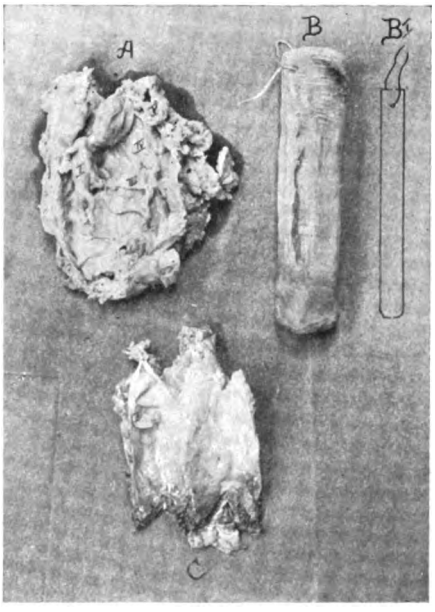

FIG. 4.—*A*. Oval sac from Case II., laid open to show.
1. Fetus.
2. Cord.
3. Intestine, hernial, through umbilical opening.
4. Placenta, amniotic side.
5. Placenta, serotinal side.
B. Laminaria tent causing abortion.
B.[1] Laminaria tent, original size.
C. Decidual and oval cast from Case III., of seven to eight weeks, laid open and shows (1) amorphous mass representing remnant of fœtal development.

tained, that the index finger is often too short of reach, and unreliable. I tried the index finger in my first case, and because it failed me I changed to my middle finger, for the middle finger is longer, stronger, and swivels better. I introduce my half hand into the vagina and but one finger, the middle finger, into the uterine cavity, receiving the uterus as a ballooned finger tip over the middle finger, and between

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the index finger against the anterior lip before, and the fourth and little fingers against the posterior lip behind. Thus the uterus swivels upon the middle finger as an atlas, controlled and inclined forward or backward by the fingers encircling the cervix without. Abdominal pressure is made as necessary with the other hand.

I have yet to meet a uterus whose fundus I cannot reach and whose cavity I have been compelled to curage a second time for retention, or where a placental polyp has subsequently developed. This the index finger cannot accomplish so well, as a rule; the middle finger can.

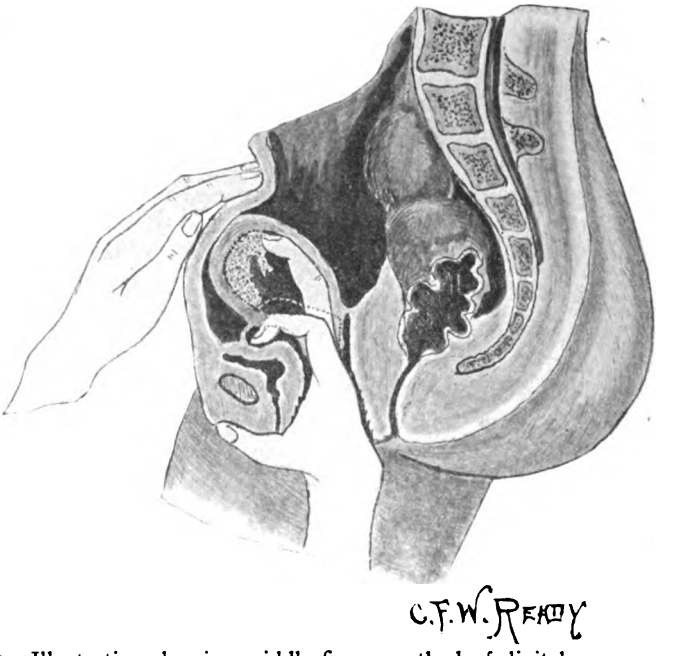

FIG. 5.—Illustration showing middle finger method of digital curage.

The second objection that curage is more painful than curettage. It should not be so especially if chloroform be given. Even were it so, the security of knowing that the cavity is clear and that all danger has been removed, amply repays for the slight transient discomfort produced by the introduction of the half hand into the vagina. It is only a clumsy operator who is brutal, nor is such awkwardness a feature of digital manipulation alone, for a clumsily-handled instrument is far more efficacious of inflicting pain than is the finger. Moreover, I have yet to meet the patient who would not gladly lend to tons of sweet-scented hyperbole rather than one iota towards an ounce of death certificates.

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A FIBROMATOUS UTERUS IN LABOR.*

By Frank A. Stahl, M.D., Chicago, Ills.
Instructor of Obstetrics, Rush Medical College.

A fibromatous uterus in pregnancy or in labor is always an interesting quantity to observe, more especially one where the fibroma springs from the lower uterine segment, and is contained for the most part within and below the superior strait, for in such a case its horoscope of future activity will be cast with prognostications of reflex peritonæal and visceral troubles from autogenic and contiguous pressure; necrosis; dystocia; abortion; serious hæmorrhages during the third stage; and, finally, a prognosis of labor complicated by a fibroid depends upon the early recognition of the growth and upon the treatment. In general practice the results have hitherto been bad ("American Text-Book of Obstetrics".). Nauss found a maternal mortality of 54 per cent. among 225 women, and an infantile mortality of 66 per cent. In Lefour's statistics of 300 cases of fibroid complicating labor, the mortality of delivery by the natural passage was 25-55 per cent. for the mother; 77 per cent. for the children. Winckel, comparing the anomalies of 147 cases of labor, complicated with fibroids, with those in contracted pelves, states that 5 to 6 per cent. of the parturients with contracted pelves die during delivery or in the puerperal state, but almost 50 per cent. succumb to myoma; he adds that these 147 cases have been published merely on account of special conditions and the difficulties which they caused during the delivery, and that we must not look upon them as the ordinary representations of these anomalies of labor.

With such a prognosis in view, a case of a uterus first seen in the fourth month of pregnancy, with a pedunculated fibroid springing from the cervico-corporeal junction, producing at one time great pain and serious reflex disturbances from pressure against the superior strait to the right anteriorly, and which after an office attention of three weeks only goes on to a normal labor, is sufficiently of interest to warrant presentation.

Mrs. K., aged 24 years, living on third floor of a high-ceilinged house; formerly seamstress; first menstruation at fourteen years, al-

* Read by title, see page 239.

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ways regular. No history of dysmenorrhœa, metrorrhagia or other menstrual irregularity; three years ago patient called on doctor for weakness and sinking spells, who stated there was no trouble other than anæmic asthenia, due to over-application to machine sewing, and advised rest and gave a tonic. Thereafter, until marriage, she has always been well. Last menstruation, August 12th, 1899. Married September 17, 1899. Patient continued well throughout early pregnancy, until the latter part of January, when accidentally she felt what she termed a small lump low down in the right inguinal region, but which caused no other distress than mental. Because of alarm of relatives, she called on Dr. X., who diagnosed the growth, and stated that he

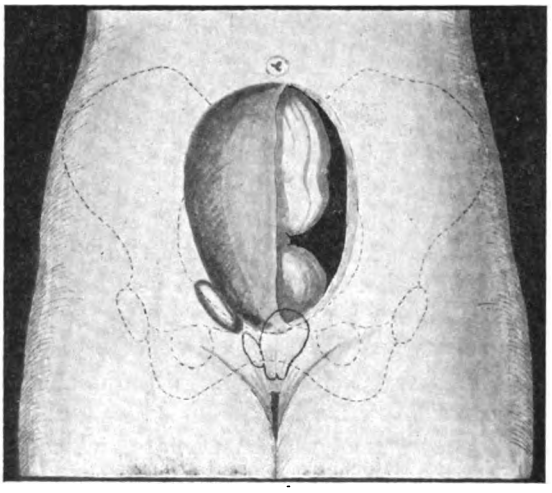

Fig. 1.—Fibroid complicating labor at the seventh to eighth month. Fibroid, though impinging on the superior strait, was elevated out of impaction possibility; normal labor.

thought it was quite likely that she might have to undergo abortion, with a subsequent myomectomy.

I first saw the patient about the first of February, and recognized a fibroid springing from the cervico-corporeal junction, shaped like a small kidney, whose upper margin could be outlined abdominally over the right Poupart's ligament at a point marking the junction of its inner third with its outer two-thirds; its lower margin, more distinct of outline, was easy of reach, high up, alongside the cervix at, and with its greater part, below the plane of the superior strait in its right anterior quadrant. Bimanually, the fibroid was slightly painful, the patient complained of pain and slight cramps only since the primary ex-

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amination of a few days before; there was also some constipation; there was no disturbance to bladder function; she has always been able to follow her light household duties.

She was given a laxative and some quarter grain morphine rectal suppositories to allay peritonæal irritation, and to neutralize the tendency to abortion. For the next two and a half weeks she did well, her bowels were regular, and suppository quieted pain and cramps. During the third week after calling on me, the husband suddenly appeared much perturbed, stating that she had been taken with sudden severe and griping pains, and had fainted, but there was no hæmorrhage, though slight backache. The suggestion might arise here that the question of an appendicitis should be considered, but my knowledge of the case ruled that out. This attack was due most probably to the fibroid suddenly slipping up and being drawn above the superior strait by the longitudinal fibers of the uterus. At this time he mentioned that he had been advised that there would be great risk to the wife if she carried to term, as there would be no room for the baby to pass, and great danger from hæmorrhages. Her suppositories were increased to a half grain, one as often as necessary to quiet pain; an Ol. Ricini emulsion was given, a teaspoonful every two hours, and an application to the abdomen over the tumor, of Ung. Hg., Bell., aa, ʒii, Ung. Simp. q.s. ℥i.

This attack was in the latter part of February. I did not hear from the case again until the day of confinement, May 2nd; meanwhile thinking because of the distance other assistance had been called in. Subsequently she related that the attack soon subsided, that she had been confined to bed for four days only, when she felt well enough to be about again. During March the patient still felt an occasional pain and cramp, undoubtedly due to the stretching of the growing uterus at the site of the fibroid, but not so sick as to be compelled to remain in bed; disturbances not serious enough to call for suppositories. During April she felt very well.

On May 2nd I was called, and found her at the end of the seventh month, with slight labor pains, at long, irregular periods; bag of waters ruptured since that morning early; cervix obliterated and dilated to admit the middle finger tip. Through the vagina the lower edge of the fibroid could just be felt, but with the contraction it was lifted away; externally it could readily be outlined as springing from the lower anterior surface of the uterus.

Aside from the lowered resistance of the parts locally, the premature labor was incurred by the high steps climbing, at the time with the weather very warm. The position of the fœtus was normal, a 1st Vert.

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(a), with a L. O. A. presentation. In rhythm, intensity and pain the course of her labor during the next fifty-three hours was typical of a normal labor, the fœtus being delivered spontaneously May 4th, about 4:30 P. M.

To observe the third stage, as concerned hæmorrhages, etc., nothing was done for a half an hour; as nothing of interest presented, a slight Credé readily brought the secundines, the membranes showing only one tear, the dilated original rupture of two days before. No hæmorrhage or other complication manifested itself in the subsequent course of the case. I had given a placebic mixture, which may have had a quieting mental effect, for the patient feared a post-partum hæmorrhage; carbolic douches at 8 A. M. and 8 P. M., as usual. The puerperium was normal.

From the 7th to the 30th of May I did not see her; she had had only an occasional transient cramp. On May 30th the uterus was well contracted, with the fibroid not palpable from without, but easily outlined from the vagina below. It seemed not diminished in size.

When I first saw the case, notwithstanding a seeming unfavorable prognosis, better than abortion followed by operation at the fourth month, I believed pregnancy could go on, the fibroid would ascend or be drawn up, and when labor did occur it would probably be normal. I did not fear a hæmorrhage, for in a case of incomplete abortion treated some years ago, I found an intramural fibroid close to the site of the uterine serotina. After removing digitally the retention, followed by a uterine douche, contraction with a normal puerperium followed.

However the case, whether with single or multiple growths, in the cervix or in the body, polypoid, intramural or subserous in character, producing a minor or a major stenosis of the parturient canal, as Coe says (*Medical News,* June, 1898): "In the decision as to the best course of treatment to pursue . . . . each case must be decided by itself; no fixed rules can be applied." So far as I could, I utilized the case to observe which were the better rule to follow in this case; immediate interference with induction of abortion, or to await events and interfere when danger presented to the mother, and later to the child. I chose the latter. Operation when I first saw the case would have been done under conditions of a localized mildly acute perimetritis, and a perimyomitis. She can stand the operation of vaginal enucleation far better now than at the fourth month. The child was a well developed seven-months' female, but succumbed some six hours after birth.

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A CASE OF SUPPOSED URETERAL TRAUMATISM.

By Henry B. Stehman, M.D., Chicago, Ill., and Los Angeles, Cal.

In the absence of positive occular demonstration with symptoms pointing to injury of either the bladder or ureter, followed by the escape of urine through a fistulous tract of the abdomen, it is sometimes extremely difficult to accurately locate the defect.

The case about to be reported was one with which I was associated and present points of unusual interest and it seems to me should be reported—by permission I am enabled to do so.

Miss ——, Aet. 50, of medium size, large and deep pelvis, well nourished, with an extraordinary deposit of abdominal fat, had been suffering for a number of years from gradually progressing fibro-myoma, a growth which had developed to a degree that distressing pressure symptoms were caused by its lateral and upward encroachment upon the abdominal viscera and pelvic organs.

The portion of the growth which filled the left half of the pelvis was developed from the uterine fundus, whereas upon the right side the myoma spread out between the folds of the right broad ligament, the walls of which had naturally been thinned by the process and pressure adhesions universally formed. This intraligamentous portion developing in the direction of least resistance had filled the floor of the pelvis on that side. The adhesions were universal; to the omentum and portion of the small intestines above and to the pelvic viscera below.

The bladder was drawn up and spread out on the anterior surface of the growth leaving scarcely more than the peritonæum and mucosa for its wall.

In a patient therefore with an extra deposit of adipose tissue in the abdominal wall, having a large fibro-myoma unsymmetrically developed, a portion of which was intraligamentous, with extensive adhe-

* Read. For *Discussion*, see page 239.

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sions that were old and firm and with attachments within the ligament, one can appreciate that the case was one of more than usual difficulty.

The difficulty, of course, arose from the size and form of the growth and its adhesions, and the danger in the resulting hæmorrhage which would necessarily follow in its delivery. In the removal, however, nothing of special interest occurred until the attempted enucleation of the intraligamentous portion.

This part of the work was left for the last; the omental and peritonæal adhesions were all separated and bleeding vessels secured, broad ligaments ligated and severed from the growth, the bladder reflected upon itself, the posterior peritonæal cuff dissected off and the peritonæal covering of the neoplasm split in order to facilitate the enucleation of that part of the tumor from its connective tissue bed.

This naturally excited excessive hæmorrhage, which was difficult to control, owing to the location of the vessels, the depth of the cavity, the thickness of the abdominal wall and the presence of the tumor.

With pressure sponges and pressure forceps all bleeding points were secured temporarily, and later permanently, by the use of ligatures.

The subsequent part of the operation included amputation of the cervix for removal of the tumor, and the ordinary details necessary to closing over the stump and rendering the entire portion extra-peritonæal.

In making the toilet, a gauze protected drainage tube was inserted to allow of the discharge of the excessive amount of bloody serum which follows the breaking up of such extensive adhesions.

It goes without saying that in a tumor of this size, in which a large abdominal incision is necessary, with the breaking up of old and firm adhesions involving the disturbance and handling of the intestines, the management of the tumor itself, the time consumed in controlling the hæmorrhage and closing the abdomen the patient necessarily would suffer considerable shock.

From this, however, by vigorous stimulation she fully rallied and gave every evidence of making an uninterrupted and complete convalescence.

At the end of twenty-four hours practically no more serum was obtained by aspiration, and so the tube was removed but not the protecting gauze.

Thirty-six hours later, the abdominal dressing, which up to this time had remained dry, became decidedly moist from the escape of urine.

The natural inference was that during the operation the ureter had

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been pinched, that pressure necrosis had resulted with either a fistulæ due to the loss of a portion of the ureter or that it had been bisected following the separation of the necrotic segment, or that violence of a similar character, causing the same results, had been done to the bladder.

A self-retaining catheter was employed and in course of a few days the gauze removed and in its stead a soft rubber drainage tube introduced. By connecting this tube with another, the urine was carried into a receiving bottle, so that the patient was not only thereby kept comfortable, but the amount of urine escaping was accurately determined.

Repeated measurements with comparisons showed the singular fact that the amount of urine collected in the bottle connected with the self-retaining catheter was just about equal to that contained in the one attached to the tube leading to the fistula.

Differentially this pointed to the defect as connected with the ureter; moreover at no time thereafter was it possible by injecting colored aseptic solutions into the bladder under considerable pressure, and several efforts were made, to demonstrate the presence of this fluid in the tract or at the orifice of the abdominal fistula. What then was more natural and reasonable than to conclude that the injury was connected with the ureters? Under anæsthesia the patient was examined with a sound in the bladder and both a straight and curved probe in the fistulous tract, but no sign of the defect discovered.

Somewhat later the patient was again anæsthetized with a view of a thorough exposure of the floor of the fistula, disclosure of the distal end of the injured ureter and the performance of a possible ureteroplasty.

In dilating the tract, however, which was attempted cautiously and slowly a rent was made in the bladder, the wall of which was still found to be very thin.

This accident, however, did not prevent a further search for the supposed patulous ureter, which in the dense connective tissue was not located, and which in all probability owing to the myoma had been disturbed from its normal position, but it decided the operator to first repair the rent in the bladder and do the plastic operation later. After the bladder was closed the fistula was highly packed with medicated gauze, and a self-retaining catheter again introduced into the bladder.

Thereafter no urine escaped from the fistula, but instead healthy granulations sprang up and it was soon closed.

This case demonstrates that the usual tests in determining whether

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urine escaping through an abdominal fistula is from the ureter or bladder are not always reliable and consequently do not possess the differential diagnostic value that the books teach. It occurred just before the Harris segregar was presented to the public; but whether it would have shed any light on the subject, depends entirely upon the location of the defect.

Ureteral catheterization was not employed because the evidence was apparently so overwhelmingly in favor of an ureteral defect that it was not considered worth while, nevertheless, in the light of what happened, it is evident that even though a catheter had been passed, and urine obtained, the possibility of passing the instrument into the patulous orifice of the proximal portion would have still been a factor in discounting the value of the test. It would seem therefore that here was a case in which it was impossible to arrive at a definite knowledge of existing pathologic conditions without subjecting the patient to a surgical procedure which might have for its object the anatomical differentiation of different structures.

It is evident that the defect was in the bladder, possibly in the line of the rent produced by distending the fistulous tract, but it would seem that it must have been provided with a valve-like projection which closed the orifice when the viscus was distended, and it is not unlikely that this mechanical condition was more possible owing to a partial involution of the bladder wall in consequence of the thinness and lack of tonicity caused by the growth of the fibro-myoma.

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TRANSACTIONS OF THE CHICAGO GYNÆCOLOGICAL SOCIETY.

Stated Meeting, June 15, 1900.

The *President*, T. J. WATKINS, M.D., in the Chair.

Curage; Two Advantages It possesses over Curettage.

BY F. A. STAHL, M.D.

(See page 222.)

DISCUSSION.

Dr. JOSEPH B. DE LEE: I want to correct an impression that Dr. Stahl has erroneously received in regard to the introduction of the hand into the uterus. I have been introducing the hand into the uterus, in cases where it is absolutely necessary, for years, and in this connection I desire also to emphasize the danger of introducing the hand into the uterus. It is certainly a procedure which is fraught with great danger, and when there is no absolute indication for it I do not believe it should be done. In discussing the doctor's paper, I took the position that the finger should be used instead of the curette wherever possible. But there are some cases in which the finger cannot be introduced into the uterus, as in cases of very early pregnancy; but wherever it is possible it should be so used, to discover a perforation of the uterus or retained fragments of ovum, which latter condition is almost inevitable if the curette alone is employed.

Dr. GUSTAV KOLISCHER: The topic introduced by Dr. Stahl is a very interesting one, and should be freely discussed, but time will not permit. I want to emphasize the point made by Dr. Lee in regard to using the finger for the purpose of dilating the cervix. The danger of the curette is usually underrated because those cases where the uterus is perforated are not published. I would like to call attention to one point, that frequently we have to deal with a septic condition in which the uterine walls are emaciated, and in early pregnancy part of the uterine wall may become thin and bulge forward in the form of a balloon. It explains why the uterus was perforated by the curette, and remnants of placenta are left in the uterus in little cavities. The difficulty which Dr. Stahl mentioned in reaching the fundus may be very

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easily overcome if he introduces the index finger and places the other hand outside of the abdominal wall, controlling in this way the thickness of the uterine wall and preventing perforation or injury to the uterine wall and bringing the uterine body in close contact with the index finger even in a very large uterus.

Dr. ALBERT GOLDSPOHN: I likewise think it is of great importance to impress upon general practitioners as much as possible the principles that have just been enunciated. The dangers from curettement for retained secundines are greater after labor at term, when the uterus has been completely expanded and contracts to a small part of its former size. There is no disappearance of tissue in those few hours, but a folding of the mucous membrane into wrinkles must follow, when the muscular wall contracts and reduces the cavity so greatly. The curette in such an organ is more like a buttonhook raking inside of a loose pocket than curetting. The finger is the only thing that can be of service rationally in a uterus that has been expanded to the extent of a completed gestation. It must at least be a guide for the curette. And yet the curette in careful hands is not so disastrous in abortions where the uterus was expanded less, and sometimes can be used very safely. It is important to impress upon general practitioners the fact that the removal of secundines is a different thing altogether from ordinary curettage as applied to the gynæcological uterus. In one instance it is more like removing the furniture in a room without the carpet, while in the other it is removing the carpet.

Dr. LESTER E. FRANKENTHAL: I find that the chief advantage of the finger over the curette is the following: Of course, we all know the uterus may easily be perforated. To my mind the chief advantage is this, where we use the finger, we can determine the exact location of the secundines, and we naturally curette that part to which the secundines are attached; whereas when we use the curette we are apt to curette the whole mucosa, which in septic cases is a dangerous procedure, in non-septic cases uncalled for.

Dr. CHARLES S. BACON: It is unfortunate that this subject comes up at so late an hour. It is bound to create some discussion if we go into it. This subject was discussed some two years ago and the various methods of dilating the uterus were touched upon, which I think is absolutely essential in considering this subject. It has been assumed by the writer that dilatation is performed rapidly. If I remember rightly, the chief criticism made two years ago on Dr. Stahl's paper was dilatation by means of tents in infected cases. Of course, that is the great difficulty with the use of the finger in dilating the cervix. In those cases

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where the cervix is already dilated, so that the finger is quite easily inserted, there is no question but that the finger is a safer instrument to use than the curette, provided it be clean. But there are a great many cases, perhaps the majority of them, where interference is necessary, where the cervix is but slightly dilated. Rapid dilatation under anæsthesia is sometimes a dangerous procedure. Dilatation with branched dilators, which are often used, always leads to tear at the internal os, and even with the dilators of Hegar, which are much better, there is generally a giving-way, and where we have a uterus in the condition that it is in some of these cases, it is a matter of considerable importance. I believe, for that reason, the use of the finger is restricted. So in cases which occur in my own experience, I believe the curette is the preferable to use.

The question of cleansing the finger is one that cannot be overlooked, nor can its importance be minimized. The practitioner, who generally handles these cases, is not in the habit of doing laparotomy, and he does not make the finger aseptic, and there is no doubt but that infection very often occurs from the finger itself. For those two reasons, the advantage of the finger over the curette is not absolutely established.

Dr. Reuben Peterson: The value of a discussion is the bringing out of different opinions. I object to the use of the finger as a curette. In the treatment of early cases, and those are the ones where we want to get rid of the secundines, the curette should be used. Formerly much of my work was obstetrical, and when the secundines are to be removed have always found it a comparatively simple matter to forcibly dilate the cervix and then curette the uterus.

The impossibility of rendering the subungual space surgically clean has not been sufficiently emphasized. The only reason why we should employ the finger in these cases would be the danger from the use of the curette, and I believe that with ordinary skill the danger is very slight.

I would also object to the use of the middle finger in preference to the forefinger. The latter is much better educated and will be far more serviceable in palpating the interior of the uterus. I find it very awkward to use the middle finger in making gynæcologic examinations, and I believe that the extra length is apparent rather than real. You cannot bend back the third finger as far as you can the middle finger, and therefore cannot introduce the latter as high up as you can the forefinger. It is possible that the finger may be used to some advantage in palpating the interior of the uterus in order to ascertain if anything has been left

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in the cavity, but that is a different matter from using the finger-nail as a curette, and that is what has been recommended.

So far as teaching the general practitioner is concerned, those who have seen the general practitioner cleanse his hands well know that when he uses the index finger as a curette he is generally using a very septic instrument. He can be taught far more easily to boil an instrument, and to use it within the uterus than he can be taught to cleanse his hands.

Dr. JOHN A. LYONS: I desire to add my testimony in support of Dr. Stahl in reference to the use of the finger in the place of the curette. I do not think the curette should be used in the cases under consideration, unless there are symptoms of infection, then curette freely. I have had to introduce my hand into the uterus at term quite often to remove membranes and stop hæmorrhage, yet I have never seen infection occur, but I am quite certain I have many times prevented infection by doing so, even recently in a case where I had been compelled to keep my hand in the uterus for half an hour until I became almost exhausted in an endeavor to overcome post-partum hæmorrhage. Yet I have to see my first case of infection from the introduction of the hand into the uterus, but I attribute the saving of several lives to boldly entering that cavity in this manner.

With regard to the use of the index and middle fingers, I believe it is possible with most of us to reach a little higher with the index than with the middle finger, and one can easily demonstrate this to his own satisfaction by measuring. It is exceedingly difficult to remove the secundines in the early stage of pregnancy with the finger, in a percentage of cases, and therefore the curette has to be employed in these cases to reach high enough, in order to thoroughly evacuate the uterus, and thus prevent infection.

Dr. STAHL (closing the discussion): To save time, I will endeavor to answer collectively the points that have been touched upon. I may say that I notice some difference of opinion since I submitted my inaugural thesis on this subject some seven years ago. At that time some of the discussions were so animated that they were suppressed. I think the discussion has shown that where possible the finger is the safest instrument to use for retention in the uterus, especially in cases of abortion, and I am quite sure the future will bear me out. I think it will only take a few months before this will be proven to the satisfaction even of Dr. Peterson, who seems not yet converted.

As to rendering the finger aseptic, this is the charge which has been repeatedly reiterated in our discussions. I think the time is past when

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it is necessary to reiterate about keeping the fingers clean—for this is the Alpha of asepsis, and surely we are beyond that step.

With reference to dilatation, as to the assertion that tents are septic and unsurgical; whether a tent or an instrument be septic or aseptic, surgical or unsurgical, is a matter that lies entirely with the operator to determine. I believe that the tent to-day in some cases is far superior to acute divulsion, particularly in those cases where we have retention and sepsis. There is no difficulty in the use of a Goodell dilator. The only reason I do not use it is because I think it is better to adopt a slower method and to produce as little traumatism as possible. Therefore, I still believe that in some instances the tent is a splendid dilator, and I would like to have any gentleman present prove that a laminaria tent more than any other instrument is a source of sepsis. Where I use these tents I can put my finger into the uterus, remove the retention as a rule intact, and the patients are up on the third day.

Referring to my use of two, the middle and index, fingers in vaginal diagnostic work, I would say that I have always made use of two fingers instead of one finger—the index (for reasons suggested above in my paper). I have always taught such use in my college obstetrical and gynæcological work. For vaginal palpation, for explorations and for differential diagnoses in gynæcology and obstetrics, the index finger alone cannot define so far or so accurately as both together. In obstetrics more especially the differentiation in presentations are favored by the two fingers, likewise those between extra-uterine pregnancy and ovarian cyst.

The exceptions I make are in cases of virgins.

A Fibromatous Uterus in Labor.

By Frank A. Stahl, M.D., Chicago, Ill.

(See page 231.)

A Case of Supposed Ureteral Traumatism.

By Henry B. Stehman, Chicago and Los Angeles.

(See page 23.)

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